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MONITORING TIMES

**Hear More DX!
Top DXers Share
Their Secrets**

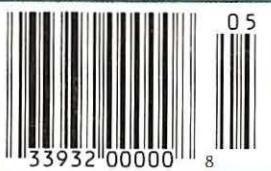
**White House
Communications**

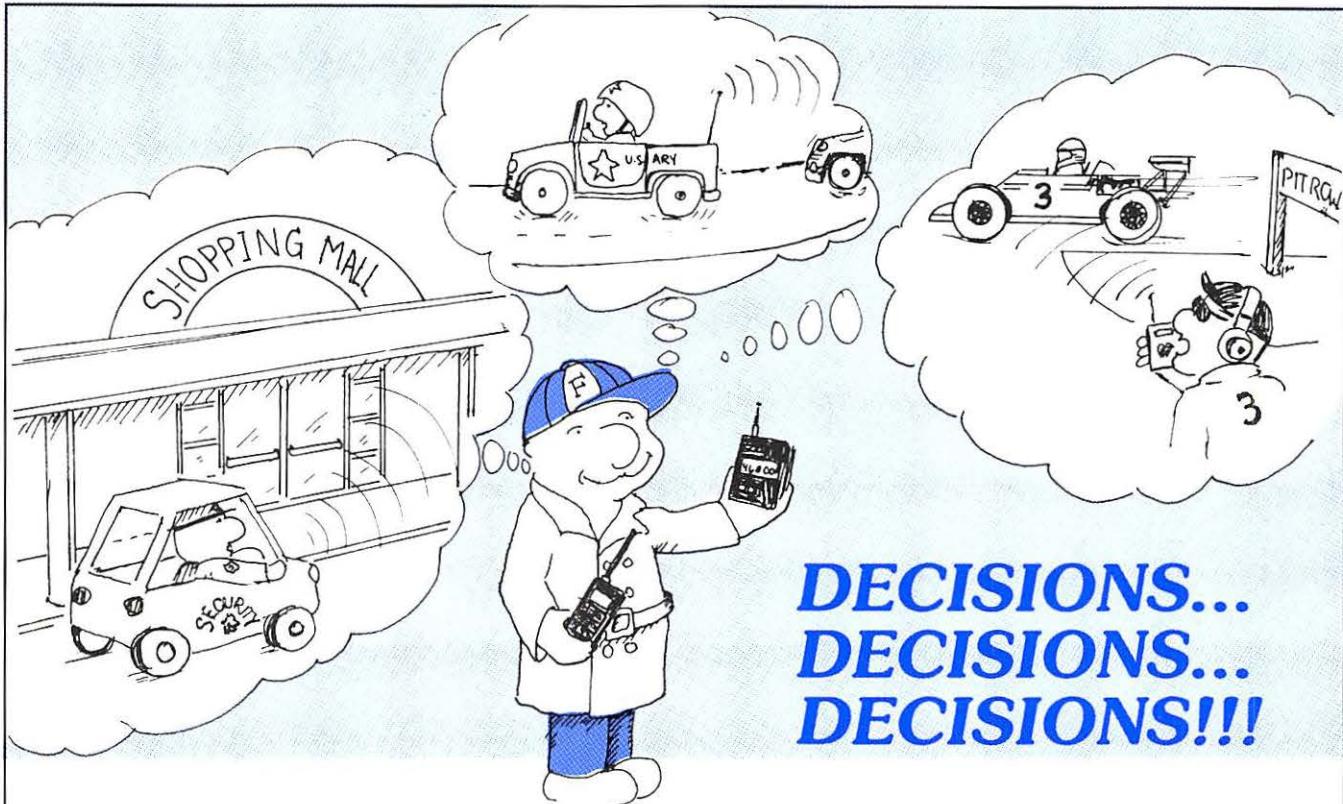
**Scanner Programming
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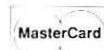
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MONITORING TIMES

May 1990

The Last of WNYS' "Touch of Class" by Don Bishop

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Every Sunday afternoon for the past 22 years, Frederick Stark has recreated a classical music program from the 1960s on his radio station. Problem is, Stark is not licensed to transmit, except as an amateur radio operator. So, although WNYS was the longest-running mediumwave pirate in the U.S., the FCC shut it down at last. Don Bishop tells Fred's story.



Monitoring Times Convention

10

The convention of the year is building momentum as exciting events are planned and more radio personalities respond; Look for all the details in this update.

DX'ers Discussion

12

Have you ever looked with envy at the "DXperts" and wished you could ask them how they do it? Were they ever beginners? Do they have special equipment or techniques that enabled them to become so well-versed in radio monitoring?

MT has set up a panel of well-known experts and asked them these very questions for you in this feature on "The Secret to Hearing More Stations."

FM DXing by Karl Zuk

16

It's an unpredictable, though not unusual, phenomenon -- One day you'll tune across the FM dial and hear a station you've never noticed there before. This occurrence, known as "skip," has given birth to a hobby known as FM DXing -- Logging, identifying and verifying the reception of stations which are out of the normal reception range of your receiver.

Karl Zuk helps you map out your strategy for catching stations hundreds, perhaps even thousands, of miles away!

Communications Expert to the White House

by Michael Esposito

20

Don Pitts took over White House telecommunications during the administration of Calvin Coolidge, when its link with the outside world was a pull-cord switchboard. By the time he retired in 1971, he had served eight Presidents and had designed an emergency strategy that could put more than one hundred people in touch with each other on one conference call in 90 seconds.

That's just a foretaste of the tales Don Pitts has to tell of his varied career in Washington, as reported by Michael Esposito.

ON THE COVER: Andrews Air Force Base, part of the "Mystic Star" network

Scanner Programming Basics

by Bob Kay

Don't let that new scanner intimidate you with its "mega-banks" of memory! *Monitoring Times'* quick tutorial will help you get and keep control of those 400 memory channels so they work for you.

And more ...



selling and who's buying!

If you're satisfied sticking to your small-scale operation, why not build your own antenna? Uncle Skip's Beginners' Corner (p.38) and Clem Small's Antenna Topics (p.96) both have simple antenna projects for the ham or SWL this month. You're a scanner buff, too? Then Doug Demaw has a project for you in his VHF/UHF preamp (p.92).

Wondering what to listen to? Rod Pearson presents a good selection of federal frequencies from central Texas and Miami, Florida (p.40). James Hay can get you started listening to and identifying ships on the Great Lakes (p.42).

If you find satellite dish set-ups to be fascinating but confusing, you'll be interested in the first weekly TVRO user's net. Ken Reitz tells all about it in his Satellite TV column on page 48. As an added bonus he'll let you in on a new source of compact disk quality music with no interruptions.

Reviews this month include the Regency INF-50 scanner and AIE Tone Finder (p.88) and the DAK MR-101 portable shortwave radio (p.86).

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LETTERS

Thanks for all of the great feedback on the first annual *Monitoring Times* Convention, October 5, 6 and 7 in Knoxville, Tennessee. The staff here is quite excited about having the chance to meet everyone and we've got all kinds of things cooked up.

Ian McFarland of Radio Canada International will be hosting a number of events and will be recording an edition of his "Shortwave Listener's Forum" program at the convention.

Also in attendance will be Radio New York International's Alan Weiner. Alan made international headlines when he parked a ship in international waters and challenged the American system of broadcasting. He is currently an applicant for an international shortwave broadcast license.

Bob Kay has been talking about having a "bug" hunt, so bring your scanners. Ike Kerschner will be putting a special events ham station on the air and people arriving by car will be able to get directions by tuning in 147.40. The talk-in will be operated by the Radio Amateur Club of Knoxville.

There will be exhibits. There will be a fleamarket. The IRCA has invited you to their DXpedition Sunday night. The convention will even have its own radio station broadcasting on 530 kHz for the duration of the event! This is going to be great so be sure to get your registration in now. And we'll see you in Knoxville!

Here's some more fun you can have with radio. On July 14th, a group of radio enthusiasts in Florida are going to launch a high altitude, radio-equipped, balloon, from the Crystal River Airport. The time of the launch will be 1300 UTC (0900 EDT). Alternate launch dates are July 15 and 21. The flight of the balloon is expected to last two hours and reach 100,000 feet before returning to earth by parachute.

The payload will consist of a fast scan amateur television transmitter operating on 434.000 MHz. There will also be a 1 watt ID beacon on 144.340

MHz. The beacon will include altitude, internal and external air temperature, as well as the ID K4BV in Morse code.

It's estimated that signals from the balloon will be audible for 500 miles. In addition, you might want to tune in mission control on 71555 kHz LSB. Sounds like fun. Mark your calendar.

"Did you see the Christian Science Monitor Newsletter, *Monitor Month*?" asks Ken Martle. "In it they talk about an interview they had with Radio Moscow's Vladimir Posner. Now get this. They call him a 'renown journalist.' I almost fell off my chair. I listened to Mr. Posner for years on the shortwaves and let me assure you, he is no journalist."

Mr. Posner would like very much for you to think of him as a journalist and is annoyed that some in the West "have branded me a propagandist." He sincerely hopes that someday, Americans will come to see him "as a normal, authentic, honest person..."

So does Mr. Coffee, Juan Valdez and Betty Crocker. Mr. Posner is, of course, a public relations specialist and a very good one to have hooked our worthy colleagues at the *Christian Science Monitor*. See the review of Posner's new book, *Parting with Illusions*, in this issue of *Monitoring Times*.



Vladimir Posner -- Working for Radio Moscow doesn't make him a journalist.

Art Loftus of Islington, Ontario, writes in with this simple plea: "Please tell me what I am picking up on 4885 kHz at approximately 0445 UTC. A lady comes on and begins repeating the words 'deva, deviet, bosum, nedla, nul, sadum and ozar.' I am spelling these words as I hear them. No one seems to know the language."

We do not know either; however, on a similar frequency we recently heard a high pitched voice repeat the words "oo ee, oo ah ah, wing, wang, walla walla bing bang." It turned out to be Dave Seville and the Chipmunks.

Sorry. Just a bit of silliness there. Anyone know who this might be?

"I was wondering how long it would be before someone would mention the conduct of amateur radio operators on 14.313 MHz," writes William Ritz of Cleveland, Ohio. (See "Closing Comments," March 1990 *Monitoring Times*.) "It's like a sick soap opera -- it's bad, it's predictable, but you tune in anyway."

"When I first entered the hobby of radio monitoring back in 1959, I aspired to be an amateur radio operator some day. In the same way that I did not want to be identified with C.B. radio in the 1970s, I do not wish now to be a member of the amateur radio fraternity. Code or no-code, only an idiot would aspire to be a ham now."

"I can't believe the shock and indignation that filled your 'Closing Comments' editorial in March. You folk are living in the past. Remember all the hype that hams used to feed us during the '50s?" asks Ken Peters. "You know, ham radio operators as stalwart members of the community, ready in an instant to assist their neighbors in time of disaster?

"Well, you don't have to listen to the fracas on 14.313 MHz to get a real feel for ham radio. Those days are gone. Tune in anywhere. The ham bands are a refuge for long-winded bores with nothing else to do with

[Continued on page 100]

COMMUNICATIONS

Electronic Blizzard Brings Down U.S. Planes

The scene is Libya, 1986. High in the sky, an armada of 33 high-tech U.S. fighter planes begin their attack. But something is wrong. One plane, carrying two crew members, crashes. Of the surviving 32 planes -- including five F-111's -- seven are unable to get off even a single shot.

The probable reason: an electronic blizzard that, according to Pentagon officials, came not from the Libyans but from high-powered U.S. military transmitters that filled the night sky with electronic signals designed to jam Libya's anti-aircraft defenses, hunt down targets, guide weapons, and communicate.

According to Air Force Col. Charles Quisenberry, during the Libyan strike, U.S. weapons "were interfering with each other." Numerous U.S. weapons, some of which were electronically guided, went astray during the attack, damaging three foreign embassies and diplomatic residences, including those of France and Japan.

Further, says Quisenberry, some of this interference can "actually affect the ... aircraft's flight controls as well as its fuel controls," either putting a plane into an uncontrolled turn or dive or turning off its fuel supply.

The Pentagon recently finished a classified seven-month investigation of the problem which led officials to order a more detailed three-year

probe. Preliminary studies of one war plan shows "thousands of [frequency] conflicts" among weapons. Says Quisenberry, "There are major, major problems out there..."

OTH-B Radar to the Rescue

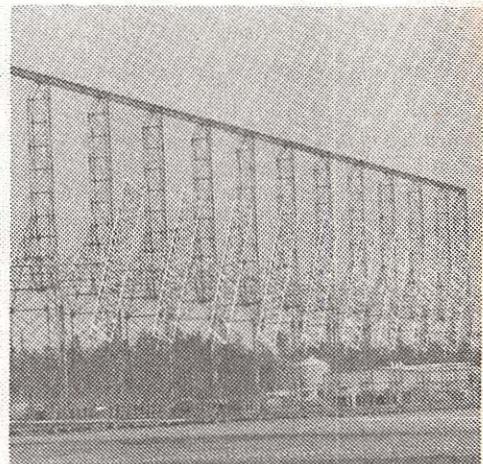
With three engines out and their aircraft beyond the range of conventional radar, a Cubana Airlines crew struggled to control their plane. Responding to a distress call from the crippled airliner over the North Atlantic, controllers at Gander Oceanic Air Traffic Control in Newfoundland, could not locate the stricken aircraft.

Fortunately for the Cubans, GE Aerospace was in the process of running a full test on their OTH-B (Over the Horizon) radar. Using the radar's unique ability to automatically match filed flight plans and actual aircraft tracks, OTH-B operators had already locked on to an aircraft that did not correlate with a flight plan and flashed the Cuban airliner's actual location to controllers at Gander, who were able to guide the plane to a safe landing in Newfoundland. The Cuban aircraft was on a Havana-to-Belgium flight.

Four Antennas are Better than One

Engineers from Blaupunkt have applied a high-tech solution to an age-old problem: getting stations to come better on the car radio. The answer is phased-array steerable antenna technology. Known as the auto-directional system, the ADA not only eliminates the need for an external rod antenna but also allows the antenna reception pattern to be electronically steered in the direction of the strongest signal path.

It's not as complicated as it seems. Engineers mount four simple foil antennas inside each of the car's bumpers, one on each corner of the car. According to *Electronic Engineering Times*, the key to the system is a



Friend or foe, OTHB will find you when no one else can.

"signal monitoring computer that analyzes the individual antenna levels, rotating the array in search of the best possible direction to steer the array. Rotation and steering are inaudible to the listener.

There is no word as to the availability of the system.

Radio Antorcha Martiana Closed

Long-time shortwave listeners will remember the exploits of the fiery anti-Cuban clandestine station Radio Antorcha Martiana. It was eventually closed by FCC officials in 1982 after its location was discovered in Florida.

According to the FCC's Miami Field Operations Bureau, Radio Antorcha Martiana has once again been on the air -- and has once again been closed.

Eloy Escagedo of Miami, Florida, was fined \$1,000.00 for illegally operating on 7350 kHz. The station was, according to press releases, "used to transmit commentary and music."

On the Other Side...

Anti-pirate enforcement activity by the FCC on the east coast now shows signs of activity on the west coast. There, the Los Angeles office of



Greatest threat in 1986 attack on Libya not Qaddafi, but our own electronic wizardry!

COMMUNICATIONS

the FCC shut down an unlicensed pirate broadcast station identified as "Zodiac."

Investigators, using "the monitoring network," located the station at the residence of James Keul of Anaheim. He was fined \$1,000.00 for operating on 7416 kHz.

Emergency Boxes Go Cellular

Because New York City's emergency call boxes have "deteriorated beyond the point of cost-effective repair," Police Commissioner Lee Brown said the department will replace them with cellular phones. Over forty percent of the old call boxes were broken.

After testing 20 solar-powered cellular emergency phone call boxes, the city is now planning to install some 850 more city wide. At a cost of \$3,447.00 each the phones are expected to cost the city some 2.9 million in the end.

The phones provide a direct link to the 911-emergency dispatching system already in place in the Big Apple.

Chinese Ship Launched

Entertainer Yves Montand and Chinese student leader Wu'er Kaixi christened a 1,200-ton boat that will soon begin transmitting pro-democracy radio broadcasts into China from international waters. The 262-foot boat, formerly a British oceanographic vessel, was renamed *Goddess of Democracy* after the statue was erected by Chinese students in Beijing's Tiananmen Square last year.

The project is sponsored by the French magazine *Actuel*, with assistance from news publications in several other countries. The operating budget is estimated at some \$1.4 million.



Cuba: No Listening to Foreign Stations

A Soviet Newspaper article, in a rare attack on Moscow's long-standing Caribbean ally, gave some insight into Cuban society. Vladimir Orlov, writing in the weekly *Moscow News*, said that "Cuban society is more stable than in the majority of other socialist countries...thanks to a network of committees for the defense of the revolution which permeate the entire country."

Such committees, he continued, track down people listening to foreign radio stations or who hold "politically immature conversations," and work closely with the security services, Orlov wrote.

So now you know where *not* to plan your next DXpedition.

Romania Was Into Electronics

Romanian monitoring centers, sealed since the overthrow of Nicolae Ceausescu last December 22, were opened by the army. According to a Reuters report, the Ceausescu regime was into bugging in a big way.

When officials opened the doors of the secret taping centers, they revealed banks of tape recorders and control desks. Conversations were allegedly monitored from all over Bucharest.

Soviets Use Sex to Slow Down Polish Protest

The Kremlin used a "secret weapon" in an attempt to slow a mass Soviet demonstration in favor of democracy. The weapon, which was about as low-tech as you can get, was a pornographic movie.

Soviet chiefs ordered the television screening of a Polish film, "The Sex Mission," to coincide with an anti-Communist protest march that the Kremlin feared would turn violent. The film featured steamy nude scenes of the kind rarely seen on Soviet television.

According to reports from London, analysts suggest that the ploy may have worked. Organizers had hoped for some 500,000 people to turn out. Estimates of the crowd were as low as 100,000 with hundreds of thousands of Soviet citizens apparently remaining glued to their TV sets.

Democracy, it seems, can wait -- for some things.

MTV Invades Czechoslovakia, Poland

The walls between East and West continue to fall. First was the invasion of U.S. "men's" magazines into the eastern bloc; now comes MTV, the rock 'n roll music television channel. According to a report in the *Boston Globe*, MTV Europe launched with 20,000 subscribers in Czechoslovakia and 5,000 in Poland this month.

Viewers in the two nations will receive the music television service 24 hours a day from the Astra satellite via a home dish.

MTV recently added Yugoslavia and Hungary to its global territories and made its first live feed to East Germany in November.

Phony Distress Call Spells Trouble for Teens

The party is over for three New Buffalo, Indiana, high school students who are accused of making a false distress message. According to police chief Ed Caid, the youths, ages 16, 17 and 18, admitted to sending signals claiming the "Party Boat" was sinking in Lake Michigan.

The call, which set off a futile search involving rescue boats and two helicopters, was placed on marine channel Q6, an international distress frequency for water craft.

In addition to criminal charges, the Coast Guard has indicated that it intends to file suit against the 17-and 18-year old and the juvenile's family in an effort to recover the cost of its rescue operation.

The Last of WNYS'

"TOUCH OF CLASS"

The United States' oldest mediumwave pirate ends 22 years of weekly broadcasts and fades to dead air on December 17, 1989.

by Don Bishop

Frederick K. Stark's time tunnel sucked in radio airwaves from the 1960s and breathed them out into the light of New York's Hudson Valley. Every Sunday for the past 22 years, Stark faithfully recreated a radio program that he listened to as a youngster drawn to classical music. That program, also broadcast on Sundays, was transmitted over the 1,000 watt facilities of Rensselaer Polytechnic Institute's 1330 kHz WHAZ.

Music and Radio

"I listened to WHAZ when I was small," said Stark, who is now 37 years old. "I learned a lot of classical music from that station."

"I wanted to be a conductor and composer. I wanted to make records for the young person like myself who rarely gets to go to concerts. I wouldn't look for big publicity, just to be a recording artist who presents classics to shut-ins and people who take time to listen," said Stark.

"I play the violin. We even have a piano in the house. I compose some music. I wrote a serenade for string. Someday I'll write a symphony. It takes me a long time, the mechanics of getting it down. But I do have the ideas, and I pick up a melody like that. I wanted to be a composer -- conductor -- and then the radio bug hit me."

DXing

Radio gripped Stark by the ears and pulled him into DXing, a hobby in which listeners strive to hear stations as far away and in as many locations as possible. "I was nine or ten years old when I got a shortwave receiver, the Star Roamer by Knight-kit. It was only half-built when I turned it on. The first station I picked up was Radio Berlin International. I was so hungry for shortwave."

Stark soon found he got more pleasure out of DXing the AM band than the shortwave frequencies. With careful listening on 891

kHz, he heard an Algerian station, "the most distant station I've heard. But what I'm trying to pick up is California. Years ago, people tell me, KFI, Los Angeles, was received here. I always wanted to pick up the west coast. The most distant station I ever picked up as a preteenager was KSL, Salt Lake City."

But listening wasn't the only thing on Stark's mind. "I've always wanted to own a licensed station. But it is basically impossible to go through proper channels to obtain a license. It takes big bucks -- megabucks -- to start a station."

Dream Channels

Over the years, Stark's dreams were channeled into other achievements. Instead of becoming a composer-conductor, he learned to play instruments and amassed a huge library of classical music. Instead of starting a licensed broadcast station, he studied electronics, became a two-way radio technician, earned commercial and amateur radio operator licenses, and built WNYS, where his dreams were realized eight hours every Sunday.

"Urania" Brand

Stark began to build his own equipment, first a console, an audio processor and then line amplifiers. "All the equipment was designed and built in-house, except the reel-to-reel and cartridge tape machines and the turntables. 'Urania' was to have been my brand name, the top-shelf name in broadcast equipment. A lot of today's transmitters are not designed by audiophiles. The WNYS equipment was set up by an audiophile -- me."

First operating from his parent's house, Stark used his transmitter and studio equipment as a pirate broadcaster. His call letters and frequencies changed over the years to avoid using letters assigned by the FCC to someone else and to dodge interference.

What once was WNYW on 650 kHz and 640 kHz became WNYS on 1000 kHz.

During his service in the army, Stark was stationed at a base nearby. He came home almost every weekend to broadcast. He did the same while attending college.

After he married, Stark and his wife bought the house across the street from his parents' house, and WNYS moved in with them. When a new station forced WNYS off 640 kHz, Stark relied on his AM DXing experience to pick 1000 kHz. "I know the AM band allocations like the back of my hand. I know where to broadcast so as to not interfere with another station. The 1000 kHz dial position is clear during the day. At night -- WNYS never was on at night -- WLUP, Chicago, broadcasts on that frequency."

Stark said a "top hat" antenna boosted the station's coverage. "The 'top hat' part of the antenna is four horizontal wires suspended between two towers," he explained. The wires connect in the center to a vertical wire that drops to an antenna tuning unit at ground level. Copper cables and rods buried beneath the earth under the antenna form a ground system. "I always say you never have enough ground." "WHAZ," Stark said, "had a top hat antenna during its early years."

WHAZ "Returns"

"I longed to bring back the times of WHAZ," Stark said. His homemade studio and massive classical music library recreated WHAZ's *Air Magazine* and *Afternoon Concert* programs. His 75-watt transmitter broadcast as WNYS at 1000 kHz on the AM dial -- broadcasts that continued for the next 22 years. "One of our mottos was 'WNYS, a touch of class in the Hudson Valley, West Taghkonic, New York.'"

Sunday Morning Hangover Symphony filled the 9 a.m. to noon period. It was "the perfect program to help one recover from Saturday night, if it's been one of those nights." *Symphony* was not patterned after WHAZ; the Troy station had no broadcast during that period.

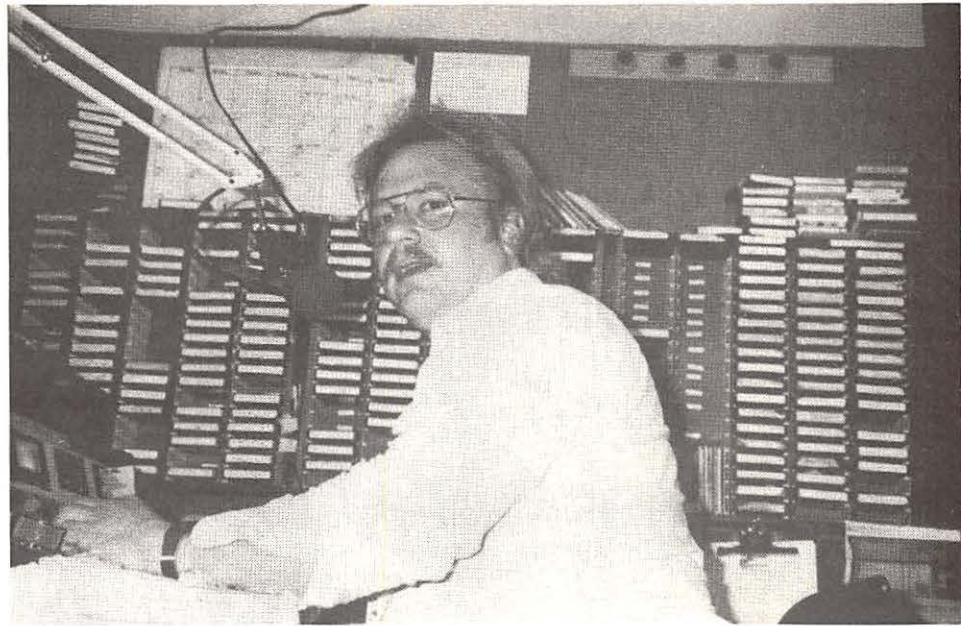
"The afternoon shift at my station was exactly the same as WHAZ's," Stark explained, "including the music." *Air Magazine* included rebroadcasts of programs from "the golden age" of radio.

"Some of the listeners collected old radios,"

WNYS Sunday program schedule:

9 am --	"Morning Hangover Symphony"
Host:	Alex Hazeltine
Noon --	"Air Magazine"
Host:	William Mathias
Rebroadcasts of programs originally aired during "the golden age" of radio.	
2 pm --	"Afternoon Air"
Host:	William Mathias
5 pm --	Sign-off

Fred Stark, a radio amateur and two-way radio service technician, set the record as the longest-running medium wave pirate broadcaster in the United States.



Stark said. "They would fire up their old radios and hear shows like *Fibber McGee and Molly* and *Amos and Andy* on their Atwater Kent and Crosley receivers. They were overjoyed when I carried the old radio shows."

Air Magazine's introductory theme music was *Typewriter* by Leroy Anderson, performed by Arthur Fiedler and the Boston Pops. The program closed with a short instrumental theme.

At 2 p.m., Stark, as William Mathias, hosted the *Afternoon Concert* program of classical music. "No pretty-boy performances, such as Zubin Mehta and Leonard Slatkin," he said.

Afternoon Concert shifted its emphasis at 4 p.m. with a pops concert, including collectors' items on the Epic label and recordings by Arthur Fiedler and the Boston Pops. One more echo from WHAZ at three minutes to five, as Stark played as the closing theme the second movement of Mahler's first symphony, the same closing theme that WHAZ used in the 1960s. The sign-off played at 5 p.m. and WNYS left the air at 5:05.

WNYS avoided detection by the FCC for a remarkably long time. Said Joe Reilly, president of the New York State Broadcasters Association, "This has been going on for ten years. This guy is a legend in that area of the state."

Stark came to Reilly's attention when a radio listener blew the whistle on WNYS, asking Reilly to tell the FCC. "A listener wrote a letter describing the pirate station as a nuisance. He asked what could be done about it."

Reilly called Kevin McKeon, a friend of his at the FCC's New York office. McKeon, a public affairs specialist, told Reilly to see if he could get a tape recording of a WNYS broadcast. "I told the listener what McKeon said, and the listener recorded WNYS. The listener sent me the tape and I sent it to the FCC. McKeon called back and said, 'You got one. Where does your listener friend say the pirate station is?' Then the FCC sent a mobile

unit to go out and get the guy."

Who Blew the Whistle?

The listener wants his identity kept secret. Regulatory agency administrative actions differ from judicial proceedings in that complainants' identities are not revealed if they request privacy. But few listeners know state broadcasting associations exist. Stark believes the complainant represents a broadcast station licensee who became annoyed with WNYS -- and maybe jealous of its classical programming. Pirates have pride:

"We had the finest fidelity on the air possible for an AM station. Our distortion was extremely low. You didn't hear any. We had a wide band of audio. The highs sounded like FM. We had the deepest bass, the highest highs -- a very clean tube-like sound, which makes sense because everything was tubes," Stark boasted. "A listener called up and told me about another station some distance away playing classical music. 'How do you know you're tuned to our station?' I asked. 'Because yours sounds better,' he answered. Our fidelity speaks for itself. That was one thing we had to offer. You normally don't hear much talk about fidelity on AM."

Clinging to 1000 kHz

The "other classical station" is WKZE, 1020 kHz, a station that broadcasts classical music for an hour or two on Sundays. It began broadcasting October 27, 1986, with 250 watts and upped its power to 2,500 watts in March 1989. Stark's failure to give WKZE more clearance by moving WNYS to another frequency may have led to his downfall.

Sometime after WKZE boosted its power, a

deficiency in its studio-to-transmitter link developed. The STL receiver did not filter the 19 kHz stereo pilot signal, instead passing it to the AM transmitter. Modulated by the 19 kHz pilot, WKZE's transmitter emitted spurious signals at 1001 kHz and 1039 kHz, 19 kHz to either side of its 1020 kHz carrier frequency. The spurious signal at 1001 kHz interfered with WNYS.

"When I was off the air during the week, I would listen in the early morning to WLUP on 1000 kHz," Stark said. "WKZE would go on the air about 6:45 a.m. to 7 a.m.. As soon as they threw their carrier on, the tone would come right in."

He thinks one or more WYNS listeners may have figured out the problem and complained to WKZE. Those complaints, he believes, may have led to a WKZE complaint against WNYS. But WKZE General Manager Drew Wilder said he heard about WNYS only after it was closed down. The station's contract chief engineer, Dave Groth, said he did not complain to the broadcaster's association or anyone else about Stark. Groth confirmed the stereo pilot signal problem, which he repaired by installing extra filters on the STL receiver.

"I didn't realize WKZE was broadcasting spurious signals until I got an anonymous call saying there was a beat frequency between WKZE and this other station that went off when they went off the air," Groth said. "That's when I located the pirate. Actually he was playing good music, classical, which is unusual. I do not condone anything illegal. But it is refreshing to hear a classical format on AM. It is illegal, but it is an alternative program. Pirates often have programs that legal stations cannot or will not play."

Groth said if a pirate station's broadcast ever



would interfere with any of his client stations' signals, he would take action. "We had listeners saying there were beat frequencies," he said, but the beat frequencies affected WNYS, not WKZE. "The New York FCC did pay Stark a visit. I had made no calls. I had not taken any action. It is possible the FCC, monitoring the bands, found WNYS themselves."

Groth and Stark are acquainted with one another because Groth keeps the keys to a radio communications repeater site that Stark sometimes visits as part of his job as a two-way radio service technician. But Groth said he did not know Stark was the operator of WNYS until the bust made local news.

"Is there more to the listener's complaint than meets the eye?" broadcast association president Joe Reilly asked. "I don't know. The listener may not have agreed with the programming Stark was putting on. I just got the letter and did what I normally do. The association has a working relationship with the FCC. We interface with the broadcasters on some issues. When the FCC gets a complaint against a broadcaster, sometimes the agency asks us to call the broadcaster. We've been able to defuse a lot of situations with that relationship. Stations get defensive when the FCC calls."

When WNYS was on the air, "the listener claimed he couldn't get his regular radio station," Reilly said. "The interference was intermittent. I don't know why he didn't write the FCC. I've had other calls about pirates. But this is the first the association has ever taken action on. I've had calls but listeners generally don't follow through. In this case, the letter was well written and the listener followed through."

Interference to 1010 kHz

An FCC press release cited interference WNYS caused to "a licensed station on 1010 kHz." The nearest such station is WINS, a 50,000-watt station in New York. According to

Stark: "Number one, you can't hear WINS in this part of the state. Number two, even nearer to New York City, WINS does not come in well, because of its directional antenna. In Poughkeepsie, where I work, WINS does not come in well. Number three, if you're down the road and you're trying to listen to 1010 kHz, you're going to get some splatter."

So what. None of this matters to an FCC engineer, who will close a pirate station whether it causes interference or not.

The Day of Reckoning

Thus, on December 17, 1989, at about 2 p.m., FCC electronics engineer Judah Mansbach traced the WNYS signal to Stark's house. "The doorbell rang," Stark said. "I thought to myself, 'It must be Jehovah's Witnesses or somebody. I'll go outside and chase them away.'"

It was Mansbach ringing the bell at the front door. "I usually don't use the front door," Stark said. "Come over to the side door," I told him." He did.

"Hello, I've been listening to your station," he said."

"Oh, and who are you?" I asked."

"I'm the FCC," he said."

"Do you have ID?" I asked. You always ask for ID when the FCC comes," Stark advised. "He showed ID and asked, 'May I come in?'"

"Being as I'm easygoing, I invited him in. He came in, saw the setup, took notes and that was that. He said that it was wrong, that I was a pirate radio station and it is against the law to do this. Then we went downstairs and looked at the transmitter over."

"It was December 17, so we were playing some Christmas music, *Good King Wenceslas* by Percy Faith. That side of the album ended and we faded down and there was dead air for five minutes while he checked everything over. That was the last thing we had on the air."

"It's a shame, because I had a nice Christmas program planned for the day before Christmas,

Fred Sparks:

"WNYS, a touch of class in the Hudson Valley, West Taghkonic, New York."

"Sunday will never be the same. WNYS was my whole life."

which was the Sunday of the following weekend."

Stark said he asked Mansbach whether he wanted to take the transmitter; Mansbach said no. "He asked me what other licenses I had; I told him about my commercial and amateur licenses." Stark said Mansbach told him the FCC would get in touch with him in a few weeks. "They sent me a letter and fined me \$1,000. A warning would have been fine. I guess that is the cost of broadcasting."

Stark seemed a little miffed that Mansbach used his direction-finding apparatus to locate WNYS. "All you had to do [to find us] was go to the post office. We gave our address on the air quite a bit for requests and comments. A regular listener would know the address by heart."

Mansbach was not as impressed with Stark's station as Stark himself is. "I found a homebrew transmitter and an army surplus power supply," the FCC engineer said, "and the usual stuff for audio. It wasn't a great station. He wasn't really trying to push it." Why didn't Mansbach accept Stark's offer of the transmitter? "It was built out of breadboard. He said he would destroy it and I believed him."

Stark confirmed: "I told the FCC I would get rid of the transmitter. My fear was if they were to come by again and see the thing back up. I'm already in the frying pan. I didn't want a fatal foot." I undid everything."

Mansbach did not see the WNYS top hat antenna, which had been destroyed not long before by a windstorm. "Stark had a dipole cut to size and hidden in a tree," Mansbach said. Asked whether he meant a halfwave dipole, which for 1000 kHz would be approximately 500 feet long, Mansbach said he did not know. "Stark is a radio amateur; he knew what he was doing when he built the antenna," he said.

The Lone Pirate

Mansbach said most pirates are part of a group, but that as a pirate, Stark was a loner

and unusual in that respect. Stark has few compliments for other pirates: "Most pirate stations deserve to be caught. The profanity. I picked up some stations years ago, on 1610 kHz or 1620 kHz, from New York City. They sounded horrible. They sounded like their audio response was from 300 kHz to 3,000 kHz. They had 60 Hz hum. Their modulation was distorted. The profanity and garbage they played. They deserve to be taken off the air." No mutual admiration from Stark.

The former pirate operator said he would never have used shortwave. "When you're on shortwave, you're going worldwide. My audience is local. In a car you don't have a shortwave radio. Cars have AM radios. My target is the local community."

FM was out, too. "I didn't go FM because in the 60s AM was more popular. Where I live, we're in a hole, the bowels of Columbia County."

Stark said WNYS was "like a novelty. It primarily was for the promotion of classical music. We had 50 to 100 listeners, based on mail received. We are missed in the area and many people felt it filled a vital need. After we went off the air, the phone rang off the hook. 'Sorry to see you go,' 'My Sundays are ruined,' and 'What am I going to do now,' people said. A lot of people depended on the station."

A Hobby that Grew

"WNYS started as a hobby, a young kid setting up station and running it. Later on, the station grew into something good. It had a lot of listener response. We did fill a need in the community. We are certainly missed. Many are missing us already," Stark said.

H.V. Henninger is a classical music fan and mediumwave DXer in Saugerties, New York, 17 miles from WNYS.

He had been a regular listener since about 1984, when he first noticed the station. Not long after he first heard WNYS, he sent a reception report to the address Stark announced frequently. Confirmation came in the form of a personal visit.

"I had a knock on the door," Henninger said, "and Fred introduced himself and came in. We had coffee, then went upstairs to the radio room and I played back the tape of his station. That's how I got to know Fred."

Henninger was a frequent listener who followed the station's transition from 650 kHz to 640 kHz and finally 1000 kHz. "I rarely ever

missed a broadcast," he said. "I'm off work Sundays so I always listened to him. We would talk frequently, and over the years his broadcast quality got better and better. He was always tweaking and adjusting the Urania transmitter."

In Saugerties, Henninger heard the heterodyne caused by WKZE's malfunctioning STL receiver. He heard it when he drove as far as 70 miles away from WKZE, where it beat against another station's carrier. Now the heterodyne is gone, and so is WNYS.

"That station essentially made my day on Sunday," Henninger said. "I listen to a lot of classical music, which is something Fred and I have in common. He has the kind of record collection that, to a person who enjoys good high-quality classical music, cannot be beat. That station was his life, really. He worked at that station; that was what he spent the majority of his free time on. He would go to various record stores looking for new material to play."

Henninger said Stark's mother always was afraid he was going to get caught. "His wife was not that keen on it, either. She was afraid he was going to get caught some day. But she understood this was his life, that he had been on the air 22 years. He is the longest-running mediumwave pirate in the United States."

A Typical WNYS Music Log

9 a.m. "Sunday Morning Hangover Symphony"
 Beethoven: Twelve Contra Dances
 Moniuszko: "The Raftsmen" overture
 Draeseke: Symphony No. 3
 Saint-Saens: Piano Concerto No. 4
 Andreyev: "Under the Apple Tree"
 Grieg: Symphony
 2 p.m. "Afternoon Concert"
 Saint-Saens: Symphony No. 3 (Organ Symphony)
 Shumann: Symphony No. 1 (Spring Symphony)
 Beethoven: String Quartet No. 2, Op. 18
 Bartok: Concerto for Orchestra
 Tchaikovsky: Swan Lake Ballet-excerpts

QSL Cards

Stark said even though WNYS is off the air, he will verify correct reception reports. The station occasionally made evening equipment tests that may have been heard beyond the local area, he explained. Reports can be sent to: WNYS, Rd 1, Box 191, Elizaville, NY 12523.

"The next time I broadcast, it will be with a license," said Stark. He might put the station on cable, an idea that occurs to many pirates after they are busted. "We don't have a cable company in the area. Maybe I'll turn the red light on and beg for money to put together a cable system. I can go cable FM and supply TV for viewers, too. I'd put together a small studio once again and have fine programming."

Stark said he talked with the FCC about the future possibility of obtaining a broadcast license. "They said my WNYS operation wouldn't affect my eligibility. I would like to have a licensed station. But it is hard to get the money and meet the criteria. For the common Joe who goes to work, it is an impossible dream."

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I ran WNYS as if it had a license. Everything was done to the book."

Actually, Stark broadcast one more time, as a guest on WPYX-FM, 106.5 MHz, Albany, New York. The station's morning DJs, Bob Mason and Bill Sheehan, read a newspaper story about Stark on the air when Stark and his coworkers at New York Communications' radio service shop in Poughkeepsie were listening. "The guys in the shop said, 'Hey, Fred!'"

The DJs called Stark's parents, who gave them the shop number. Stark took a vacation day to be heard on their show. For his musical introduction, Stark brought the overture to Gilbert and Sullivan's *Pirates of Penzance*, which faded in with *Hail, Hail, the Gang's All Here* and was followed by Bobby Fuller's *I Fought the Law and the Law Won*.

Now, Stark's pirate broadcasting days are over. But radio continues as part of his life. He services police, fire, business and industrial two-way radio equipment at New York Communications in Poughkeepsie. Radio signals emanating from his West Taghkonic home are confined to the amateur bands where he is heard communicating as amateur station KA2YLZ. Classical music continues to play, but only in the Stark's living room. The Hudson Valley has lost "a touch of class."



MONITORING TIMES

Convention Builds Momentum

Have you ever heard something absolutely *fascinating* on the radio, told a friend, neighbor or even spouse, only to find that really, they just weren't that interested? Darn! What's the matter with them! I just heard a 5 watt transmitter from Yingyang Province in North Korea and they don't care!

How about scanner monitoring? You're listening to a local law enforcement channel and suddenly you hear, "10-33--all units clear the channel--shots fired at 1827 Prospect Avenue--officer down." "Honey!" you shout breathlessly; "Come here and listen to this!" "Sorry," she replies, "I'm busy vacuuming the bird cage."

Wouldn't it be great if you could get together with people who share your enthusiasm for monitoring, people who enjoy talking--and talking--about radio?

Such a place exists--it's not a fantasy--but it will only last for three days this fall. The place is the luxurious Hyatt Regency Hotel in friendly Knoxville, Tennessee, and the event is the 1990 *Monitoring Times* convention!

The whole idea got started during a conversation between aero columnist Jean Baker and Managing Editor Larry Miller. "We really need to get together," said Jean. Intrigued by the idea, Miller began calling other *Monitoring Times* columnists. Scanner columnist Bob Kay said, "Sure," I'd love to go. Just tell me the time!"



Bob Grove will share his expertise and experience with on-the-spot sensitivity and selectivity testing.

And so it went--Larry Magne, Larry Van Horn, Bob Grove, Clem Small, Karl Zuk, Joe Woodlock, Ken Reitz, "Uncle Skip" Arey, Jack Albert, Greg Jordan, Kannon Shanmugam, Rod Pearson; each day, more are checking in.

So, what does my registration fee buy me?

This is not a hamfest where visitors have to pay a fee to buy merchandise. The *Monitoring Times* Convention is a unique learning experience as well as a social gathering, an opportunity to rub elbows with the experts, to learn more about listening to the spectrum from the real luminaries of the industry.

Shortwave listeners will have the opportunity to meet popular *Radio Canada International* announcer/producer Ian McFarland. Ian, one of the greatest guys in the business, will be holding seminars for beginners, giving listeners a "behind the scenes" look at *Radio Canada International*, answering questions about the industry and even recording a special edition of his popular *"SWL Digest"* program right at the convention!

Larry Magne, who is also a member of the *"SWL Digest"* team as well as *MT's*



Wondering how new and old receivers compare? Ask the expert, Larry Magne.

shortwave receiver reviewer and publisher of the best-selling *Passport to World Band Radio*, will be there to brief his audience on the latest receivers and give out tips on choosing the perfect radio.

Gene Hughes, publisher of the famous *Police Call* directory, will be there as well, sharing his wealth of information on monitoring police, fire and emergency medical communications.

Bob Brown and Harold "Dr. DX" Cones of the *North American Shortwave Association (NASWA)* will be giving a lively hour-long presentation on DXing.

Also in attendance will be *Radio New York International's* "infamous" Alan Weiner. Alan made worldwide headlines when he parked a ship off the coast and challenged the American system of broadcasting. Scuttling his pirate ship for the time being, Alan is currently an applicant for a legitimate international shortwave broadcast license.

Bob Grove, our master of ceremonies, will be setting up an equipment laboratory and will be offering no-charge, on-the-spot, sensitivity and selectivity testing. Be sure to bring your receiver or scanner! Bob will be sharing his expertise in several areas of monitoring.

Scanner hobbyists will meet Bob Kay who has been talking about having a "bug" (hidden transmitter) hunt, so bring your scanner! Other scanner notables will teach you how to get more out of VHF/UHF listening. We are working on a tour of a major public safety communications center as well.

Ike Kerschner will be putting a special events ham station on the air. You can be part of the convention even if you are unable to attend by sending in a reception report or working the station and you'll qualify for a special, limited edition QSL!

Stop by the hospitality suite and meet your favorite columnist. Talk scanners with Bob Kay; design an antenna with Clem Small or compare low frequency loggings with Joe Woodlock. Even Glenn Hauser is planning to attend!

Make plans now to attend this fall!



Come equipped with your scanner(s) and join Bob Kay in a "bug hunt."

Thanks to the people from the Radio Amateur Club of Knoxville (RACK), you'll have no trouble finding the convention if you drive in. Tune your scanner to 147.30 MHz (hams: 147.90 input) and they will literally talk you into the Hyatt!

The International Radio Club of America (IRCA) will be holding their annual convention along with us. These people know how to have fun—they've arranged tours of local broadcasting stations and have even

planned a DXpedition in a nearby park for Sunday night!

And believe it or not, the convention will even have its own radio station on the air! *The Voice of Monitoring Times* will be broadcasting on 530 kHz for the duration of the event, keeping convention-goers up to date on the latest seminars and events.

Saturday evening is the optional honors banquet—a delicious cut of top sirloin with salad, vegetables, potato, dessert and beverage! A vegetarian plate is optionally available. Special awards, drawings and prizes will be presented following the banquet, as well as a spirited and enjoyable talk by our keynote speaker!

That's only a sampling of what's going to be happening this fall at the 1990 *Monitoring Times* convention, the most distinguished gathering of leaders in radio listening ever assembled, and you can be part of it!

So mark your calendar for October 5, 6 and 7; exhibits will be on display all three days. Friday is set aside for informal get-togethers and registration. Seminars will be held all day Saturday.

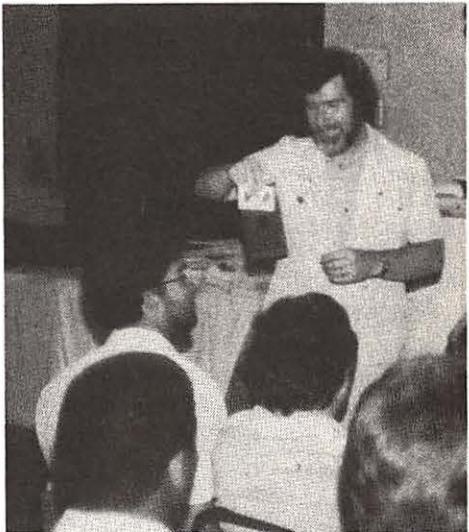
As more special guests and events are lined up we will let you know. But don't wait—make your reservations now by filling out the registration blank below and sending it along with your check or money order (no credit cards) to: Monitoring Times Convention, P.O. Box 98, Brasstown, NC 28902. We will send you advance details following your registration.

Planning to fly in? Delta is the official

airline of the 1990 *Monitoring Times* convention. For more information or to book your reduced-fare flight, call 1-800-221-1212. Be sure to use *MT*'s discount number: J20088!

Room reservations at the luxurious Hyatt Regency have been reduced for this special event to a flat rate of only \$62.00 a night if you mention *Monitoring Times*! Extra roll-away beds are available or you may arrange your own sleeping accommodations.

Capacity is limited and reservations are coming in fast, so call the Hyatt Regency now at 1-800-233-1234 to reserve your room while they are still available!



Ian McFarland is planning a special recording session of "SWL Digest" at the convention.

The Monitoring Times Radio Convention

It's the Radio Event of the Year!

Sign me up! Enclosed is my \$30 registration fee. I'll see you in Knoxville!
 Enclosed as well is my \$18.40 banquet payment (includes Tennessee tax and gratuity)

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Make your check payable to *Monitoring Times* and send it to P.O. Box 98, Brasstown, NC 28902.

DX'ERS DISCUSSION

The Secret to Hearing More Stations

Because of the distances involved, it's often difficult for shortwave listeners and DXers to actually get together and talk about their hobby. In an attempt to solve this problem, *MT* has organized the first *Monitoring Times* convention for this October.

In the interim, we got some of the best DXers together in a simulated round-table discussion -- arranged by phone and conducted by *Monitoring Times* managing editor Larry Miller.

The participants are from a wide range of organizations. They include well-known Latin DXer and *Monitoring Times* contributor Don Moore, Gerry Dexter, author of the "Listening Post" column in *Popular Communications* magazine, Gayle Van Horn, *MT*'s loggings and QSL editor, and the legendary Glenn Hauser, perhaps the world's foremost authority on shortwave radio.

We begin with a brief introduction...

Monitoring Times: Let's start with a quick radio bio. How did you get started in radio and how long has it been?

Dexter: I began in '51 -- nineteen fifty one [laughs]. I don't really know how I got started but I do remember that a friend

was given a shortwave radio and I was so captivated by the whole thing that I had to have the very same thing immediately. I've been at it almost continuously ever since.

Hauser: I was living in Santa Rosa, New Mexico. My parents had an old Philco 1941 console radio which included shortwave bands. However, at that point I was more interested in seeing what I could pull in on mediumwave [AM].

Santa Rosa was an isolated area so when we got our first TV set I tried to pull in Albuquerque stations -- over 100 miles away -- but the skip stations were coming in with greater strength of not greater reliability from much greater distances. So I was pretty much hooked on DXing from that point on. A few years later I shifted emphasis to shortwave.

Van Horn: I got started back when my husband Larry and I first got married. That was back in 1978. He started telling me about shortwave and how much he enjoyed it. So we went out and bought a Radio Shack DX-160. A DX-160, a Bearcat 210 scanner and a CB [laughs]. We though we were hot! But that first night we heard the BBC, Moscow -- and I was hooked.

Moore: I started in September of 1971. One night there was nothing good on TV and I started playing around with the shortwave band on my parent's Sears tri-band. I came across HCJB, the BBC and the Voice of America. Gradually, about a year later, I began tuning around the Tropical Bands [below 5060 kHz] for stations from Latin America. I've been active ever since, except for three years that I was in college.

Monitoring Times: What kind of equipment do you use?

Hauser: Since I move around so much, I haven't become as encumbered as I might be with all the latest equipment. So I'm

using a [Yaesu] FRG-7 which has served me well. When I need to know a frequency accurately, I can measure it on a Radio Shack DX-400, if I can get it to pull in the station at all.

For an antenna, I always used nothing more than random wires since I don't particularly specialize in one part of the world or one band. There's not much point in putting up dipoles or other fancy antennas. I need something that will pull in a little of everything.

Moore: Right now I use a Kenwood R-5000 as my main receiver, an Alpha Delta SWL Sloper, a 60-meter Delta Loop antenna from Universal and an 800 foot beverage antenna in the backyard -- There are benefits to living in a rural area.

Van Horn: We have a Kenwood R-5000, an SPR-4 and Panasonic RF-3100 receiver; longwires and dipole antennas on the roof.

Dexter: I have a Japan Radio NRD-525, an NRD 515, a currently inoperative Drake R4B, a MAP [Multiband AM Pickup] unit and a couple of cassette recorders. For antennas, I use an old Mosely SWL 7-trap dipole and the other is a longwire that goes partly east, partly west and partly north.

Monitoring Times: Do you consider yourself a shortwave listener -- concerned mainly with listening to stations for their content -- or a DXer -- tuning the bands with the object of bagging rare or difficult stations?

Moore: I'm about 80% DXer and about 20% shortwave listener. I do do some shortwave listening, especially when I'm on vacation -- that sort of thing.

Dexter: I'm like Don. I would suppose that I'm about 80 to 90% DXer and the rest a listener.

Van Horn: I would say I'm a 100% DXer. There are times when I just want to sit up all night and go for the tough ones. I guess I'm a real die-hard.



When did you get started?

Monitoring Times: Do you have any special interests, some aspect of the hobby that you especially enjoy about shortwave?

Hauser: I guess you'd have to say harmonics or other oddities -- stations showing up where they're not supposed to be.

Monitoring Times: Is that because you've pretty much heard everything there is to be heard and have to rely on the unusual to stimulate?

Hauser: I wouldn't say that. I just find things that are out of the ordinary more interesting.

Monitoring Times: How about you, Gerry? You're probably the world's leading authority on QSLing. So it would have to be QSLing for you...

Dexter: QSLing, certainly. Particularly QSLing clandestines and Latins.

Moore: My special interest is Latin America. I worked in the Peace Corp in Latin America and Honduras for two and a half years. I traveled there for about a year altogether. Now I work with international students teaching English.

Van Horn: I like Africa. My favorite area of the dial is the tropical bands -- there are so many African stations down there. It's such a challenge hearing them, let alone QSLing them. I like going after Pacific stations a lot, too.

Monitoring Times: Let's imagine that we're in your radio room with you. The radio is on. It's time to DX. What will we see you do?

Moore: Since I listen in either the evening or early morning, I immediately go to 60 meters [4750-5060 kHz]. Usually I go to 5000 kHz first because it's in the middle of the band and check WWV and tune up or down.

I've got the band down pretty well and know what is regular. In the morning, for example, 4996 kHz is Radio Andina, Peru; 4990 is Radio Ancash; 4985 is a Brazilian. So as I go down, I look for anything that is unusual. Or for times when one of the regular stations is not there because that leaves the frequency open and something else might come through.

When I hear something unusual, it's

usually just a matter of sticking to it. I save the station in one of the R-5000's memories and then keep tuning. Every minute or so I check back. This is especially helpful in identifying a strange signal when the station is playing a lot of music. Sometimes I have five or six stations in the memories and I just flip back and forth between them.

I always have tape recorder going -- every moment that I'm DXing. It has a digital counter and I keep make note cards of what I'm recording. I don't listen to the tapes right away because I might miss something else live. So I make the notes and go back later in the day.

Van Horn: I keep a "hot sheet" of stations I'm hoping to hear so I get that out. I get out my logbook, *Passport [to World Band Radio]* and the *[World Radio TV] Handbook*.

Usually, I'll go to WWV and listen to the propagation forecast at 18 minutes after the hour. I'll check conditions on the bands and then head down to the low frequencies to see if there is anything I need -- just do some bandscanning.

Dexter: Sometimes I check my by-hour want list that I build by going through various information sources, jotting down notes under the appropriate time periods. So I'll start by looking to see what it is that I need at the time I'm listening.

Or I may pull out my by-frequency log and just tune around to see what I can hear that I haven't logged on that particular frequency before. Or I may take a current list of Peruvians and just bop around, checking various Peruvian frequencies to see if any of them are coming in.

That's the three ways I approach the radio, depending on my mood. Unlike Don, however, I don't usually run my tape recorders.

Hauser: Unlike the tradition, dyed-in-the-wool DXer who is probably going to get up at three or four AM to tune the tropical bands, I would probably be at the radio more in the daytime.

I'd start at the high end of the shortwave spectrum. That's where you find things like harmonics at 30 megahertz -- although I don't want to give the impression that I'm devoted to harmonic DXing and nothing else. But I would say that I am more partial to the higher



You need a better than average receiver to become a master DXer.

frequency bands -- seeing what new stations are operating on 11 meters [25670 - 26100 kHz] than I am in digging through all the noise on the lower bands.

Monitoring Times: So your listening is more casual, Glenn? You just turn on the radio and flip around the dial?

Hauser: Yes. That's more or less what I do but I wouldn't call it casual because flipping around the dial is how you find new things, how you originate DX news rather than looking for something that someone else has already reported. I'm glad that there are people who are always checking things out but with the limited time I have I would prefer to tune around at random until I come to something that strikes me as unusual and try to identify it.

Monitoring Times: If you hear something unusual, how do you go about identifying it?

Hauser: First of all, I try to figure out what language it is in, see if the frequency rings any bells in my head, applying the knowledge any long-time listener has in propagation -- to give an idea of what part of the world is likely to be coming in.

While I'm doing that I'm listening closely for further clues and hopefully to catch an ID. That's pretty much standard procedure.

Dexter: I'll check recent DX bulletins and the basic references. If that doesn't get me anywhere, I'll also work on what kind of music they're playing, what languages are they're using, what normally would be coming in from what area of the world at

that time. Very often, you can get some kind of indication just from the sort of feel or sound of the station or the programming.

I think anyone who has put in much time at the radio can almost immediately recognize a Soviet signal when they hear it -- no matter what language it's in. In fact, over time, thousands of hours of listening, I think you develop a "sense" of, you know, is this an Andean, is this a Soviet, is this from Northern Africa, or whatever. Of course, the bottom line is to try and pick out an ID of some kind.

Moore: Quite often, the first thing you hear on a station is music. If it's a kind of nondescript, easy-listening instrumental music, that in itself doesn't tell you anything. But if it's a particular type of folk music, I can distinguish between African style and Middle Eastern styles of music; in Latin America, even different styles of Andean music. Ecuadorian music, for example, is very different from Peruvian music.

Once we get to the talking, it becomes a matter of experience. I can't understand any languages other than Spanish and a little Portuguese, but I can identify French and Chinese and Russian -- or at least their general families. I couldn't tell you Russian from Polish but I could tell you it's a Slavic language. Language and music can really narrow the station's location down to a specific geographic area. After that it's really a matter of listening for things like a station ID or perhaps a time announcement.

Monitoring Times: How many stations have you heard and how many have you verified?



Keep several references handy ... MT, Passport, WRTVH, your logbook ...

Moore: I haven't counted them up in about a year. But I probably have approximately 212 countries heard and 165 verified on shortwave. Personally, I'm more into station counting than country counting. I've got slightly over a thousand stations heard and less than 500 verified. Personally, it means more to me to have heard over 100 Peruvian stations than to have heard 50 African countries.

Hauser: I don't keep track of that sort of thing.

Dexter: According to the NASWA country list, it's 235 heard and 234 verified. In terms of stations heard it's 1,562 heard and 1,410 confirmed. That's due to longevity.

Monitoring Times: In all the time that you've been tuning the shortwave bands, what is your most exciting moment?

Van Horn: After trying every night for -- oh golly -- several years, Kiribati in the South Pacific. And one night, there they were! I will never forget that. And then a couple of weeks later, they sent me a QSL!

Speaking of QSLs, about two years ago I went on a hunt for Vanuatu, which is also in the South Pacific. Finally, I got them one night on 3945. Well, just a few weeks ago, I got a QSL from them.

Those are the two that really stick out in my mind.

Dexter: Oh boy. That is difficult. Was it hearing Radio Free Czechoslovakia during the invasion or listening to the Falklands during the war? Recently, I got a kick out of hearing the new opening of Radio New Zealand.

And just the other day -- this is still tentative -- I logged the "Voice of June 4th" program that is now being carried on Taiwan Radio to China but is programmed out of Chicago. That sort of thing is neat.

Hauser: More recent things tend to stick in my mind so I suppose that it would be the June 4th, 1989, broadcast from Radio Beijing where a brave announcer condemned the massacre. It's not DX but it was a great moment in history.

Moore: For me, it's the chance to visit the stations I heard. My interest in the hobby is not

technical. I don't know the first thing about what goes on inside the radio. To me it's an inter-cultural experience.

Monitoring Times: What kind of advice would you give the beginner who wants to become a master DXer like yourself?

Van Horn: I would tell the novice DXer the same thing that my husband Larry told me when I was just getting started. Sit yourself down with an English frequency list like the one in *Monitoring Times*. Start with the easy ones but go on to work all those stations in English. Get familiar with the bands and the stations and the programming.

If there's something you're really after, be persistent. Check it every night because eventually it's going to show up.

Do your homework. Read.

Moore: The most important DX accessory is not the radio, antenna, or any books you buy. It's patience. It takes time to build up that experience. DXing is like anything else. You don't get to be in the Indy 500 in two weeks.

Dexter: Right. Don't expect instant success. Don't focus solely on how many countries you can hear because that's a dead end. Just hang in there. Learn all you can. Read everything you can read about the hobby.

Hauser: It's the culmination of so many things. You certainly need a better than average receiver. There comes a point when you can only get so much from a bottom of the line receiver. You've got to have good selectivity and sensitivity.

And, I think, a knowledge of languages -- not necessarily being able to speak them but being able to recognize them. And it's a sort of chicken and egg thing -- the more you listen to shortwave and pay attention, the more knowledgeable it becomes. And that goes a long way -- though not all the way -- towards identifying a station.

As for technique, as I mentioned earlier, I prefer random tuning.

Finally, spend as much time at it as you can but try not to let it take over your life -- which can be a temptation.

mt

Illustrations are excerpted from various Monitoring Posts featured in past issues.

Scanner Programming Basics

by Bob Kay

If you're the owner of a PRO-2004 or 2005, you already realize that programming 400 frequencies into one scanner radio can be very difficult. Many scanner buffs often ask if there is a standard format to follow. Can frequencies belonging to several different bands be grouped together? And what about utilizing the delay, scan speed and lock out features?

To answer these and many other programming questions, we need to push our scanners aside and grab a pencil and paper. We begin by separating the 400 frequencies into 10 banks. The numerical sequence of each bank will exactly match the display on your scanner radio. Don't try to squeeze all 10 banks onto one sheet of paper. Spread them out over several pages. Generally, two banks per page is adequate.

After the banks are numbered, assign a title to each one. The titles that you choose, will naturally be related to your individual scanning interests. Since most scanner buffs will designate a specific bank for local police and fire frequencies, let's title our first bank (1-40) as "Local Frequencies." The next step is to pencil in 40 local police, fire and ambulance frequencies.

The frequency of your local police, and any other frequency of special interest, should be entered twice — once near the beginning of the bank and again somewhere near the center. In doing so, you improve your chances of hearing all of the more interesting action.

After the first 40 channels are down on paper, move to the second bank and fill in the frequencies between 41 and 80. This bank should be also be labeled to reflect your next area of interest. It may be any of the following: military air, coastal marine, civilian air, FBI, etc. The key to programming each successive bank is to include the important frequencies from previous banks.

Here's an example: Suppose that your second bank of frequencies is designated for military aircraft. Don't be afraid to include your local police frequency, or similar frequency into this bank. If your local police operate on 40.10 MHz, you can place that frequency immediately following the frequency of 243.000 megahertz. Your scanner radio isn't affected by extremes in the frequency ranges between each channel.

The remaining banks, three

through ten, are completed in the exact same manner. Take your time, and make the entries neatly. Don't use a pen. A pencil mark is much easier to erase. After you're satisfied with the bank arrangement on paper, it's time to transfer the frequencies into your scanner radio. Again, take your time and be sure to check each entry. It's frustrating to learn that you missed a hot segment of scanning action because of an incorrect entry.

As banks of frequencies are filled on paper, consider designating an entire bank for miscellaneous frequencies. These are frequencies that have been located during a random search, or perhaps given to you by a fellow scanner buff. After the frequencies are confirmed, you can then permanently transfer them to other banks.

After all the frequencies are entered, allow yourself a few weeks of monitoring to sort out, move and make deletions from your list. The key here, is to change the list first. Immediately thereafter, enter the change into your scanner.

To make your ten bank lists readily available, place them on a clipboard and store them within easy reach. Maintaining the clipboard serves several purposes. It allows you to see the programming at a glance, it keeps things organized, and if your scanner's memory should fail, the clipboard will become an invaluable reference source.

Okay, we loaded our scanner with 400 frequencies and now it's time to sit back and enjoy the action, right? Not quite. We still haven't learned how to manipulate the delay, priority and lock out features.

The key to effective programming is to plan your attack on paper. Bob Kay tells you how.



Since the scan speeds of both the PRO-2004 & 2005 are relatively slow, don't further restrict the scanning speed by indiscriminately using the delay function. If you're listening to routine calls, there's no reason to have the radio pause after each transmission. When the action gets hot, use the delay feature to extend the "hang time" on active frequencies.

The priority button on your scanner radio is another feature that should be used with caution. If you assign the priority function to an active frequency, the entire bank of frequencies will be hindered by constant interruptions from the priority frequency.

The lockout function can be used to silence frequencies that provide a constant stream of information. A few examples are airport weather frequencies, and NOAA weather broadcasts. When the information is needed, it can easily be monitored by depressing the lockout review button.

To verify a group of newly entered frequencies, use the lockout feature to silence the "active" frequencies. When your scanner radio becomes silent, there won't be any doubt that the displayed frequencies are inactive.

Also remember that each of the ten banks on the PRO-2004 and 2005 can hold a separate "search mode." For example: Bank #1 can be set to search across the cordless phone band, 46.60 to 47.00. Bank #2 can be set to search the cellular phone bands, 860.00 to 890.00. The remaining banks can be designated to search a variety of interesting areas. If you already have a "miscellaneous bank," your newly discovered frequencies will have a place where they can be stored and verified.

In the high tech world of the nineties, the channel capacity of scanner radios will continue to spiral upward. Within the next few years, channel capacities are expected to reach the one thousand mark. For now, programming 400 frequencies into one scanner radio is an admirable challenge for even the most seasoned scanning veteran.

However, by following the above guidelines, scanner buffs from all skill levels can produce scanning programs that will take full advantage of their scanner's potential, customized to their own listening style. Why not say you did it your way?!

FM DXing

by Karl Zuk

Every year at about this time, a strange thing happens. All across the United States, people turn on their FM radios, spin across the dial and hear -- stations from hundreds, even a thousand miles away! These surprise appearances by "foreign" FM stations are hard to predict but not all that uncommon, if you know how to look for them.

Every sport has its strategies, and FM DXing -- as this endeavor is known to its many fans, is no different. Your first move is to acquaint yourself with the band in your location. Do a complete bandscan. Take your time and see what stations are normally heard. Note their frequencies, formats and slogans. This will save you endless time later. Be sure to keep an eye out for frequencies that are vacant.



It happens every year; you're tuning across the dial when -- surprise!

You need a good guide to FM broadcasters. *Broadcasting Yearbook* is a huge reference guide (with a huge price tag -- nearly a hundred dollars!) that includes listings of FM broadcasters by frequency and location, as well as the addresses and names to use while writing for QSLs.

The Vane Jones *North American Radio-TV Station Guide*, published by Howard Sams and Company, also has similar frequency and location lists for about one-

tenth the price but seems to often be out of date.

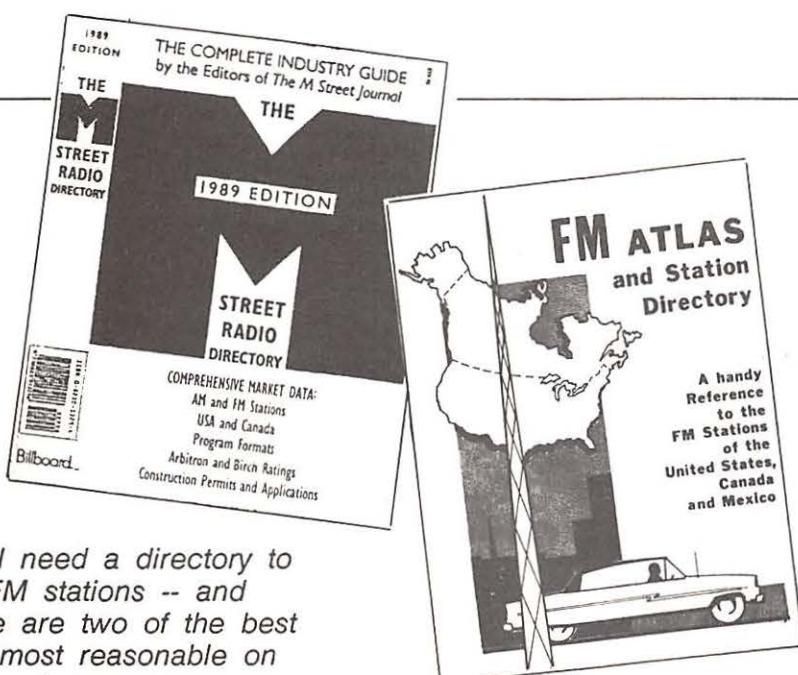
The best guide, however, is Dr. Bruce Elving's annual *FM Atlas and Station Directory*. Written for the avid FM DXer and anyone else that listens to FM, it is extremely comprehensive, compact, and up to date. It's a very affordable \$9.95 plus .90 bookrate shipping from DX Radio Supply, P.O. Box 360, Wagontown, PA 19376.

Make your own list and map out each frequency. Ask yourself what are the most likely stations to come in, and go after them! Find out when your local stations might be off the air for testing and maintenance. After midnight, Sunday night/Monday morning, is an excellent time to look.

SEARCH FOR CLUES

Think of everything a station transmits as a clue to its identity. Almost every commercial, for example, offers a street address and phone number. Most big libraries have a collection of phone books. If you hear a phone number, try to see if that prefix is used in the town you suspect. You can even call the advertiser and ask if they advertise on the station you suspect.

The FM band is sliced up into three basic categories of stations. Noncommercial educational and religious broadcasters are allocated to the 88 to 92 MHz band in



You'll need a directory to DX FM stations -- and these are two of the best and most reasonable on the market.

most cases. The stations on the 92 to 108 MHz band are commercial and are divided into two groups: Class A stations serving a local area, and Class B and C stations for regional and large area coverage.

The twenty Class A frequencies are home to lower powered stations, around 3 KW and less. They are packed much more tightly together because they can be heard for shorter distances than the Class B and C stations.

Keep in mind that the sound carrier of television's Channel 6 is on 87.75 MHz. Most FM receivers can pull in this frequency, and it makes for unusual listening.

Things can get confusing, though. Sometimes a station might seem to appear on the "wrong" frequency. WALK, 97.5 MHz, Patchogue, Long Island, New York, can be heard in the New York City area on 103.1 MHz. What you're really listening to is a low-powered translator transmitter: W276AQ in Fort Lee, New Jersey. Using a power of only one watt, and a high-gain antenna, it can be heard within at least a ten mile radius, if not further.

Head towards Connecticut and you'll hear WQXR, 96.3 MHz, on their translator in Stamford on the same frequency. These stations repeat their mother stations and identify themselves only as the station that they are rebroadcasting. It would be very rare to hear the translators' calls over these low-powered transmitters.

Also, watch out for public radio or religious networks. These stations are notorious for poor identifications which may come only once an hour. Mostly you'll hear "This is PRM" or "This is Family Radio." Again, a good guide book is essential.

Finally, if all this confusion weren't enough, DXers now have to deal with leaky cable TV lines. Cable television systems often leak signals into the outside world. When cable TV systems carry FM broadcasts, they always offset their rebroadcasts of regular FM stations. For example, a station on 92.3 would be on the

cable at 91.9. This prevents co-channel interference between the signals via cable or through the air.

Search up and down the band for transmissions that sound like millions of loud bees in a hive. These are data transmissions that control the cable system. Typical frequencies are 97.5 MHz, 106.5 MHz, and 108.2 MHz.

Chances are, if you hear a data signal, you'll hear other strange signals as well. If

your local 98.3 MHz station also appears on 98.7 MHz, you might be picking up regular and cable FM. Keep in mind that your cable company is responsible for cleaning up these leaks. This is especially important if you DX FM!

And always run your tape recorder! One chance might not be enough to hear that rare ID, or other clues. It also gives you a permanent record of your great catch.

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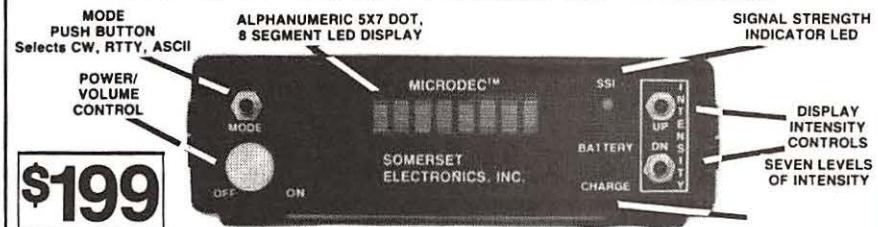
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WKSU-FM, Kent State Univ (Photo/Bob Grove)

Public and religious stations are among the hardest to ID, so turn on your tape recorder to take advantage of every clue offered. Skip may last only a few seconds, and you'll need to be prepared!

HERE COMES SKIP!

Possibly the best time to listen for distant FM DX is just before dawn until a few hours later. The atmosphere collects moisture during the evening, and the ionosphere's electrons become discharged because of the lack of sunlight. This allows signals to drift in from up to 600 miles away, or even farther. This condition is called Tropospheric Skip or simply "Tropo."

This is the most common type of FM skip. It is very dependent on the weather. If an oncoming weather front is bringing a cloud cover of moisture between you and your target, your chances are much better for good skip. The signals will probably come from one general area, and the distance of the skip will decrease as the sun burns off the morning's dew and fog.

E layer skip can produce more distant stations. During the summer (and occasionally during mid-winter), the next highest layer of the atmosphere becomes

energized. You'll start hearing stations from 600 to 1700 miles or more away.

Sporadic E skip can be amazing! As the name implies, it comes and goes very erratically. Imagine a large mirror, broken into a million pieces, about 80 miles above the earth. It will reflect signals completely randomly to a widely varying area. Maybe the signals will come from one place for an hour or more. Maybe it will be received for a few seconds and change to another location, or the skip will disappear completely. Studies have shown that if you are hearing skip from an area, it is likely that they are hearing stations near you.

Once again, a map is a excellent tool. Find yourself a map of North America, or wherever you live. Plot a circle of points 600 miles away, and another circle of points 1700 miles away. Your sporadic E skip will probably bring you stations from somewhere between these two circles. This will aid you in identifying unknown stations.

Stations outside of this band are unlikely candidates for your reception during these periods. Under rare periods of intense energizing, double-hop skip can be heard. The signals literally bounce off the ground and up to the E-layer for a second trip. This will double the distance of the skip. Reception of such signals are very prone to distortion and fading. Identification of these stations is difficult and often frustrating. Actually bagging one is a source of true pride!

Once in a blue moon the F layer of the ionosphere will become active enough to propagate FM skip. When this happens, and it happens very rarely, pull out all the stops! Shortwave-like reception comes to FM, and stations from thousands of miles away can be heard. This is probably the rarest type of FM skip, about as elusive as the Loch Ness Monster!

There are other kinds of unusual skip. Learn about meteor showers. These are very predictable astronomical events. Debris falls to earth from outer space energizing the ionosphere. It creates skip that is much like sporadic E, but it can pass in a flash.

Sit on one frequency, or set up several receivers, and record them during the predicted night of meteor showers. Your results might bring you wonderful catches, but they will be brief, maybe only a few seconds. Periods of enormous auroral activity can also produce similar effects.

That's the basic story on FM DX. It's an exciting and rewarding type of monitoring that can be done on any FM receiver. Obviously, the better the radio you have, the better your chances of snagging that rare signal.

But FM DX can be the great equalizer. While a good receiver and an external antenna can be useful, some of the most amazing catches have been made on inexpensive clock radios. So don't be intimidated by a lack of equipment. Go after it any way you can. This is the FM DX season. Go for it.

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National emergency comms, missile failsafe systems, bugging and debugging -- all part of Don Pitts' job description as

Communications Expert



Don Pitts still has the telegraph key from the Washington, D.C., AT&T telegraph office where he started his career in communications.

When Don Pitts took over White House telecommunications during the Coolidge administration, he spent five or ten minutes a day now and then waking up a sleeping secret service agent by telephone.

In the 1960s, Pitts and 23 other communications experts oversaw a sophisticated communications system that accidentally launched a Nike missile in the Baltimore-Washington area, despite the failsafe odds against that.

By the time he retired in 1971, Pitts had kept eight Presidents in touch with the world, had seen at least two of them bug their own offices, had helped design guidance systems for advanced missiles and had written the book for the civilian emergency warning system that will alert the nation in the event of nuclear attack.

Despite that, he cautioned an interviewer, "Don't lay in on too thick."

Donald Edwin Pitts, 81, was sitting on his front porch at The Oaks Cottage when an interviewer arrived recently. He tossed his cigarette into his yard and invited his guest into his 19-room home on Magnolia Street in the heart of Pinehurst, North Carolina.

Once inside, he recounted his 45-year career supervising communications systems for the White House.

"I started in 1926 with Coolidge," he said. "In those days, communications in the White House was more or less, you might say, a joke."

Pitts was a radio whiz kid of sorts, who built his first radio station in 1919, when he was 12 or 13 years old. He stopped shooting for a chance at a military career after his World War I veteran father persuaded him the War to End All Wars meant military service would just be a social activity in the future.

In the 1920s, he was a radio research engineer for AT&T in Washington, DC, experimenting with inter-city broadcasting.

to the White House

by Michael D. Esposito

President Calvin Coolidge vacationed in South Dakota, but wanted to remain in touch with the White House. At the time, White House communications was a telephone operator with an old-style pull-cord switchboard.

Pitts was told to set up two different telephone lines between the White House and Coolidge's fishing retreat. After that, all he had to do was test the lines each morning that Coolidge was in South Dakota by waking up a secret service agent shortly after 6 a.m. to make sure the lines still worked.

"That was the start, really, of emergency communications for the President," he recalled.

"When we got to Roosevelt, we got into a little bit different situation."

Franklin Delano Roosevelt was more concerned than any previous President with staying in touch with Washington while he was traveling. When he traveled by rail, special telephone lines were installed at every stop along the President's route. At each stop a man ran out and plugged the two lines into the side of the train.

Pitts recalled that Roosevelt's personal manager, Jim Farley, kept the President on a tight schedule. If the schedule called for a seven-minute stop and Roosevelt was still talking, Farley would signal the conductor to move the train out anyway.

"Here's these two wires on the side of the car, and they'd just go 'ping.'"

Another difference was that "Roosevelt had half the phones in Washington bugged," recalled the man who did the bugging. The telephones of cabinet members, reporters, "and Eleanor's private line at the White House," were all tapped.

During World War II, Pitts did military research. His assignment with White House communications and military research were destined to become more closely related after Harry Truman became President.

"He was my favorite, really," Pitts said of Truman.

"Truman, for example, had little affection for the tight security that has closed in around U.S. Presidents. Often, Truman would slip away from the White House and the Secret Service would have no idea where he was.

"There he'd be, down on F Street, shaking hands with people and looking in the windows."

Another time, while the White House was being renovated, Truman was the target of Puerto Rican nationalists who attempted to assassinate him while he was resting at Blair House, across Lafayette Square from the White House.

Pitts recalled he was dining in a restaurant near the scene when he heard the shooting in the street. A secret service agent was killed by the attackers.

Truman also heard the shooting in the street, "and what does he do? He goes over and opens the window on the second floor and leans out to see what's going on down there."

After the invention of the atomic bomb and the intercontinental ballistic missile, "Things changed rapidly."

The operation Pitts supervised changed from the prosaic facilities of the past to something vastly more complex. The President is the only one who can order a nuclear attack, and military planners estimated there would be only five minutes after warning of an attack on the United States for the military to respond.

"Of that five minutes, we were allotted only 90 seconds" to connect the President with other top national leaders so they could decide if it was time to reach out and touch someone with nuclear bombs and missiles.

Pitts was assigned offices in the Pentagon and he and his staff developed a system that could put 144 people in touch with each other on one conference call in 90 seconds.

"It wound up that I had 23 top telephone men in my office there at the Pentagon," he said. "I had my pick, really, of craftsmen and supervisors."

In addition, "I had a car that was really a laboratory on wheels parked outside my house," he recalled, adding he would get calls on his home phone containing a code word directing him to go out to the car.

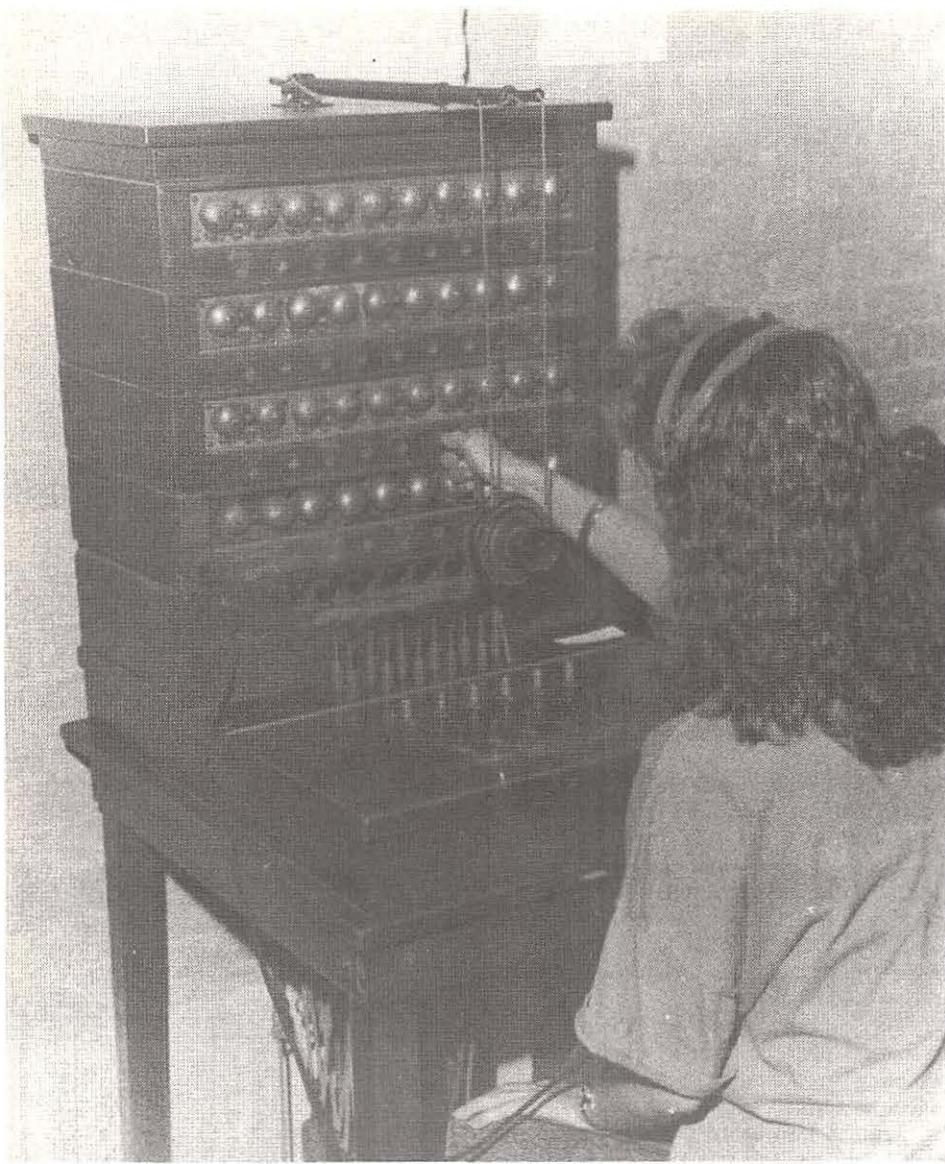
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001-100	101-200	201-300	301-400
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002	027	E	077
003	028	M	078
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Photo/Harry Baughn

When Pitts first started out with Coolidge, White House communications consisted of a telephone operator and a pull-cord switchboard.

The neighbors must have thought it an amazing sight, Pitts guessed, when he got into the car with the windows up on a summer day and revved the engine up to power the generators so he could have a telephone conversation using the equipment in his car.

Because he would be called every time "somebody'd sneeze in Moscow or something," Pitts also carried a beeper that invariably interrupted vacations.

One weekend in the early 1960s, Pitts decided he needed to get away somewhere where no one could possibly find him - fishing in Virginia with his family.

His wife, however, had an intuition that Pitts should call the office and wouldn't let the matter drop. Finally, after his wife

threatened to call the office herself, Pitts agreed to do so.

"That was the weekend of the Cuban missile crisis."

John Kennedy introduced another feature into White House communications, one later associated with Richard Nixon.

Kennedy "recorded everything in that damned Oval Office," Pitts said. "He had a beautiful set of tape decks."

"I don't know why Nixon pulled those out and put in some Sonys."

Pitts' least favorite President to work for was Lyndon Johnson.

"It was awful. I could tell you a lot of stories about that jerk," he said. "Johnson was the most paranoid man I ever met in my

life. And vulgar! Oh God, you wouldn't believe it."

Pitts remembered a call from a Southwestern Bell manager who was on the spot because Johnson had heard a hum during a long distance telephone call. Johnson was pressuring the man for an explanation, but finding the source of the hum was impossible because long distance telephone call can be routed all over the country and the routing can change during the call.

Pitts told the man to check the obvious routes and, if he found a hum, tell Johnson what he found. Then he told the man, "If you don't (find a hum on one of the lines), you put a hum on one of them, you find it and tell him what you found."

With Johnson, "It was no damn fun anymore."

Pitts stayed for the first years of the Nixon administration. Then he retired and settled in a house in Pinehurst that was built in 1895.

While interviewed there, Pitts recalled designing the national early warning system that will be used in the event of nuclear attack, as well as designing the "brains" of the Nike missile.

Experience with all these systems gave Pitts a feeling for how fail safe modern weapons actually are -- or aren't.

The Nike missile system was deployed at bases around Washington about 30 years ago. The fail-safe feature of the system was that two buttons had to be pushed in order to launch the missile. One was at the missile site. Another was at the command center, miles away.

On one occasion, a military officer was showing the missile site to a group of school children. To demonstrate how safe the missile was, the officer pushed the red button up and down several times.

But, "At the command center, we had a congressional delegation down there."

And their guide decided to demonstrate the safety of the system in the same way and at the same time as the officer at the missile site.

"The Nike missile took off," Pitts said, adding that the officer had the presence of mind to detonate the missile before it had traveled very far.

But the explosion scattered debris all over a major highway linking Washington and Baltimore.

"They think this can't happen, that they're so damn fool-proof," Pitts said. "It goes to show that these things can happen -- and do."

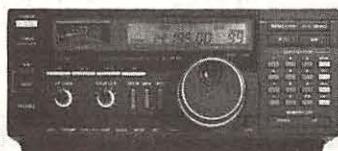
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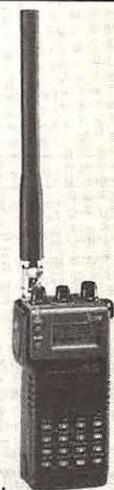


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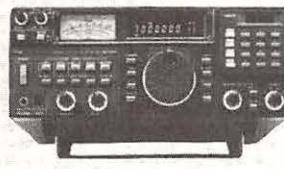
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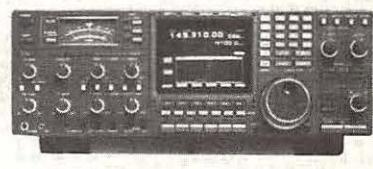
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HAVE WE HIT SOLAR MAX?

No two sunspot cycles are alike. Number 2, which lasted from 1766 to 1775, took only nine years. Number 3 lasted 9.25 years, but took less than three years to reach its peak of 158.5 sunspots. Number 4 was the longest cycle on record, 1784 to 1798, or 13.67 years. Number 6 had the lowest maximum, 48.7 in April, 1816. Number 7 took much longer to reach its maximum, 6.5 years, than to decline, 4.0 years. Cycles since 1855 have been more uniform, lasting from 10 to 11.83 years, the rise to max taking 3.2 to 5.0 years. The greatest max on record was Cycle 19, which reached 201.3 in March, 1958.

We have now passed the 3.5 year mark in Cycle 22. March 1990 was predicted to be the maximum, at 179.7, a figure which dropped as the month approached; June 1989 had the largest monthly average of 196.0; if July was the max, it would be the earliest in modern records, 34 months into the cycle. All this data comes from the Space Environment Services Center, Boulder, Colorado, which predicted monthly 10.7 cm solar flux averages for March, April and May, 1990 at 195, 230 and 210 respectively; and says, "in our judgment, Cycle 22 has not reached maximum and additional pulses of activity will occur, resulting in an extended active period through 1992."

AFGHANISTAN Radio Afghanistan in English at 1830-1930 on 15440, 11830 (BBC Monitoring) (non) Voice of Unity, from Egypt, observed on new 10590 ex-17540, and parallel 12230, 15685 at 1200-1300, 1515-1610; nasty modulation, but good strength (Supratik Sanatani, India, OzDX)

ANDAMAN ISLANDS AIR Port Blair operates 0700-0850 on 7180, 1030-1630 on 4760; also plan to add 0030-0345 on 4760 (Peter Bunn, Australia, OzDX) Watch out for China on 4760. Additional channels allocated for Port Blair are 6085, 9600 (via Bob Palmer, WA, OzDX)

ANGOLA Radio Nacional has English at 2000-2100 on 3375, 7245, 9535; "A" program on 5500 ex-4953 around 1500-0500; at 0400 also on 6530, location unknown. UNITA clandestine, Voz da Resistencia do Galo Negro, at 0500 on 9700 and new 7390; 1100 on 11830 and new 9850 (Richard Ginbey, Namibia, Radio Netherlands Media Network) Acronymed VORGAN, announced 0500 on 7145, 1100 and 1800 on 9850 (BBCM)

AUSTRALIA Radio Australia new General Manager, Richard Broinowski, writes in response to our February column: "You have given the wrong impression. Radio Australia has regarded the Asia/Pacific region as its primary target since the early 1940s. Successive reports and reviews have endorsed this. This does not mean that Radio Australia is not interested in people outside the region. We are pleased they choose RA as a source of information and entertainment. Many mention our comprehensive coverage of Asia/Pacific affairs as a prime reason for listening. It is also incorrect to report that RA is 'sending younger Australian women' to Indonesia as correspondents. The *Communicator* segment was an interview with the leader of a group of journalism students, which included young women, who were visiting Indonesia."

We're glad to hear this, but the shrinkage of RA's focus to strictly As/Pac matters in the last few months has been obvious. We've now written off *Communicator* as a not-to-be-missed DX program, since any mention of it of shortwave monitoring has apparently been banned. If the Indonesia-correspondent item was misleading, we reported the angle *Communicator* obviously meant to convey. We hate to see a potential (and former) world-class station sink so deep into regionalism.

Communicator is not kaput; heard on 13700 at 0730 Monday (C. Clifford Coffman, IN) Yes, RA's M90 schedule shows this EBA usage; English: 21825-Darwin 0900-1000. 21775-Carnarvon 0630-1400. 17630-Carnarvon 0000-0400 & 0500-0900 (no break Sat. and Sun.). 15560-Shepparton 0200-0800. 15465-Shepparton 2030-0730. 13700-Carnarvon 1530-1800. 13605-Darwin 2230-2400. Standard Chinese: 17630-C 0400-0500, 17630-S 2200-2400. Thai: 13700-C 2300-2400 (via Bruce MacGibbon) But this was quickly modified, including: 15485 instead of 15160 opening at 1603 (not to be confused with new Zealand); also at 1603, 13740 ex-13700; and 13700 opening at 0600 (MacGibbon, OR)

The M90 schedule also shows 10 kW from Brandon: 11930 at 0700-2030, 11880 at 2030-0800, 7240 at 0800-1100.

Radio Rum Jungle is a new program service via ABC Katherine, UTC Sun.-Thu. 2020-2100 on 2485, 2100-2300 on 5025; Mon.-Fri. 0705-0800 on 5025; produced by the Top End Aboriginal Bush Broadcasting Association, TEABBA. English, Kriol, and Top End languages are used. In the morning, it's the *Bush Breakfast Show*; afternoon, *Drive Time Show* (Bob Padula, RA DX Time) We find it hard to envision traffic jams in the bush ...

AUSTRIA English half-hours from Radio Austria International: 0730 on 6155, 13730, 15410, 21490. 1030 on 15450, 21490. 1130 on 6155, 11780, 13730, 21490*. 1330 on 11780. 1430 on 6155, 11780, 13730, 21490. 1630 on the same. 1930 on 5945, 6155, 12010, 13730. 0130 on 9870, 9875*, 13730*. 0530 on 6015* via Canada (* = to North America). *Austrian SW Panorama* is now heard Sundays at 1030, 1130, 1430; at the same times on Saturdays, *Coffeetable*.

BANGLADESH R. Bangladesh in English on new 15040 instead of 15255, 0800-0830 and 1230-1330, parallel new 17850 (Victor Goonetilleke, Sri Lanka, RNMN) 15040 is double a former frequency, 7520 (gh) Also on 15040 later in the day plus new 11705 (Jonathan Marks, RNMN) Such as 1815-1900?

BOLIVIA Radio Viloco reactivated on 3340.2, heard from sign-on at 0958 to fade at 1018 with two IDs, rustic Andean folk music (Kevin Atkins, AL, RCI SWL Digest)

BRAZIL Radio Integracao is the new name for the Cruzeiro do Sul station on 4765 (Claudio R. Moraes, SW Info) That's een-chee-grah-SOWN, as in a nasalized female pig

CANADA RCI's *SWL Digest* has been cut to only five airings on a new schedule: Sat. 2336 on 9755, 5960; Sun. 1836 on 17820, 15260, 13670; Sun. 2136 on 17875, 15325; Sun. 2306 on 11730, 9755; Tue. 1233 on 17820, 11855, 9635 (and C-SPAN cable audio)

Thanks to Al Quaglieri for transcribing the "Hauserisms," DX news report on *SWL Digest* and availabilizing them on the SW Echo computer net, for those who find copying them off RCI inconvenient or difficult (Andy Sennitt, WRTVH, via ANARC BBS via Larry Nebron)

RCI decided to keep its morning broadcast to Europe and Africa, now at 0500-0600, and expand the English portion to include news at 0515, CBC features at 0530 weekdays on 6150 and 9750 via Sackville; 6050, 7295, 11775, 17840 via Daventry, England: Mon., *Inside Track* (sports); Tue., *Food Show*; Wed., *Open House* (religion); Thu., *Media File*; Fri., *The Arts Tonight*. (RCI Listeners' Corner)

The CBC Northern Quebec SW Service, 9625, has weak spurs with readable audio on 9592.7 and 9657.3, heard until sign-off after local 1 a.m. (Ernie Behr, Kenora, Ont., *World of Radio*)

CHINA (non) The medium-wave only Voice of Democracy in China, shipboard clandestine planned to start in late April, got lots of publicity. Meanwhile, the Independent Federation of Chinese

Students in the USA has been broadcasting its *Voice of June Fourth* clandestine program in Chinese via Taiwan since last Sept. 30; address is Box 15-7939, Chicago, IL 60615. The frequencies have long been used by Taiwan for broadcasts to the mainland and are heavily jammed. 0250-0340 on 7250; 0615-0800, 1030-1200, 1630-1830, 2215-0020 on 11905, 7250, 7150; 0915-0955 on 11905, 7150; 2100-2200 on 15280. Differing sets of MW frequencies are also used: 603, 747, 750, 900, 1098, 1100 (via BBCM) Could be one hour earlier for summer.

COSTA RICA Radio for Peace International was knocked off the air in March by a Richter 6.4 earthquake; it left tapes on the floor, and moved roller-mounted transmitters around the studio, but no one was hurt. Schedule is 1400-1600 in Spanish on 7375, 13660; the rest mostly in English: weekdays 2000-2330 on 21566, 13660; repeated at 2330-0300 on the same plus 7375-USB; and 0315-0645 on 7375-USB only. UTC Saturdays an additional repeat follows to 1015. Saturday and Sunday 1800-2330 on 21566, 13660; repeated UTC Sunday and sometimes UTC Monday to 1030 on 7375-USB only. See tail of last month's column for *World of Radio Times*.

CUBA Despite Guatemala on 3360, Cuba shifted its new Radio Rebelde outlet from 3383.7 to 3359.8, heard at 1110 (Kevin Atkins, AL, *Fine Tuning*) It operates 24 hours, while parallel 5025 is on at 1000-0500; sometimes shifts to 5022.5 (BBCM)

CHILE A dirty trick by Pinochet just before relinquishing power: privatizing radio stations he had taken over, by turning them over to his friends; but Radio Nacional remained in the control of the military. The 5825 station previously reported is Radio Yuncal Evangelica (Gabriel Ivan Barrera, Argentina)

ECUADOR The terrorist attack on HCJB's Pifo site forced a cutback in transmissions for several weeks, with the 500-kW unit off and other transmitters unable to make antenna changes quickly. Replacing 6230, 15155 was extended to 0700, for example (HCJB)

Its semi-harmonic, 7577.53 kHz, was heard at 0615-0700 on two different receivers (Brian Alexander, PA, *FT*)

Program format changes take place May 6; we are trying to combine our locally-produced programming into a one-hour block, to make better use of our resources and provide our listeners with what I hope will be a better-sounding service (Brent P. Allred, HCJB, *World of Radio*)

ESTONIA Radio Tallinn's weekly *Estonia Today* program in English has been on the air for more than a year; a lack of qualified speakers of English has kept it from airing more often, or converting to a daily 5-minute English newscast (Radio Finland via BBCM)

ETHIOPIA (non) Voice of Tigre Revolution, clandestine, excellent around 1600 on new 5685 (Rohan Goonetilleke, Egypt, *RNRM*)

GERMANY Deutsche Welle and Radio Berlin International have agreed to cooperate in easing each other's work, while maintaining full independence of each other, in areas such as technology, frequency coordination, audience research, programming (BBCM)

GREECE Voice of Greece to North America in Greek and English: 0000-0350 on 9395, 9420, 11645; 1200-1250 on 12105, 15630, 17535; 1500-1550 on 11645, 15630, 17535. Radiofonikos Stathmos Makedonias, Thessaloniki, domestic service relay as retimed for summer: weekdays 0900-2200; Saturday, Sunday, holidays 0500-2130, on 9935, 11595; daily 1800-2100 on 9425. The VOA-Kavala 250 kW transmitter is used on 9425, 11645, 12105 (John Babbis, MD, *World of Radio*)

GUAM The FCC has cut seasonal changes to two instead of four. The March-September season is now referred to as Z-90. KSDA hours in English are now: 1000 on 13720, 1600 on 11980, 2300 and 0000 on 15125, Saturday and Sunday 0200 on 13720. DX Asiawaves: Sat. 1630, 2330 (or is that UTC Friday??), Sun. 0230, Mon. 1030 (AWR via John Carson)

IRAN A new shortwave transmitter site has been inaugurated at Zahedan, including two 500-kW transmitters, to be used in English, Arabic, Urdu (BBCM)

(non) Clandestine observations all made on a single day: Radio Iran Toilers on 10870, 6230, 4775 at 1530-1730. Voice of Iranian Kordestan at 1600-1800 on 7366 and 30 seconds behind it on 4065. Voice of the Iranian Communist Party at 1700-1900 on 6439-variable, 4470 and 3889. Iran's Flag of Freedom (Kaviani Banner) Radio, 1630-1830 on 15100, 11620. Voice of the Fedai and probably Voice of the Iranian Workers at 1600-1900 on [omitted]. Radio Iran at 1330-1430 on 9545, 7180. Mujahedin-e Khalq Radio from 1600 on 9545, 7180 (BBCM)

ITALY Italian Radio Relay Service heard testing 21500 from 1245 on Sundays (Jerry Berg and Hans Johnson, *FT*)

Voice of Europe is new, 24 hours on 7556-variable, address Box 26, 33170 Pordenone (Dario Monferini, *Play-DX*) Heard at 2335 with music and ID in 5-minute cycles (Hans Johnson, MD)

JAPAN Radio Japan's DX Corner has been expanded to 24 minutes at these new times: UTC Sunday 0330 on 17810, 15195; 0930 on 21610, 11840; 1530 on 11865, 21700 = Gabon; 2130 on 21610, 17810, 17765, 15270; UTC Monday 0130 on 17845, 17835, 17810, 17765, 5960 = Canada (Tetsuya Kondo, Yokohama, *World of Radio*)

JYJ, the timesignal station on 2.5, 5, 8, 10 and 15 MHz, offers a special 50th anniversary postcard in addition to its QSL card, for 2 ICRs (Radio Japan *DX Corner*)

KASHMIR AZAD Azad Kashmir Radio, Muzaffarabad: 0045-0605, 1050-1810 on 7268, 4980, 3665. English news, mostly relayed from Islamabad, is at 0300, 0500, 1100, 1400, 1600. Frequencies vary (BBCM)

KOREA SOUTH Radio Korea's new English schedule: 0800 on 7550, 13670; 1100 on 15575; 1215 on 9750; 1400 on 9570; 1600 on 9870, 5975; 1800 on 15575; 2030 on 6480, 7550, 15575; 0000 on 15575; the 1215 and 0000 are North America, as is the new 1030-1100 via Canada on 11715 (shifting to 1130-1200 on 9700 next winter). Content of the 1030 broadcast: Sunday, *Weekly News Review*. Other days, 10 minutes of news and then: Monday, *Seoul Calling* and *How Do You Do* interview corner; Tuesday, *Seoul Calling* and *Touring Korea*; Wednesday, *Music Box*, *Pulse of Korea*; Thursday, *Music Box*, *Focus This Week*; Friday, *Let's Sing Together*; Saturday, Abbreviated versions of *From Us to You*, *Shortwave Feedback* (Radio Japan *DX Corner*, and Bruce MacGibbon, *DX Spread*)

LITHUANIA For two days in mid-March, Radio Moscow replaced Radio Vilnius with its own transmissions. The next day Radio Vilnius discussed this, saying people at Radio Moscow were not aware of it, so perhaps blockaded by the Ministry of Communications of the USSR. (Ian Millett, Baltimore) The summer timing for English is 2200-2230, on 11770, 12060, 15180, 17665, 17690, all via Soviet transmitters outside Lithuania, which could be cut off again at any time Moscow wishes. Though Moscow resumed relays of Vilnius, very weak transmitters were put on 11770 and 12060, the latter jammed or hummed. The Minsk program at 2230 resumed with powerhouse transmitters. Moscow is using strange tactics to disrupt Radio Vilnius. And Radio Liberty is helping the Soviets to do the job: Radio Liberty heard on 11770 in Russian from 2200, on top of Vilnius (Ernie Behr, Ont., *World of Radio*)

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MYANMAR Voice of Myanmar, Yangon, has started an advertising block at 1130-1145 on 5990 (Supratik Sanatani, India, OzDX)

NETHERLANDS Quality Radio (pirate) heard on 9985 at 0900-1100, 15055 at 1300-1500 (Mike Barraclough, England, WDXC Contact)

NEW ZEALAND The tentative schedule through September of *Te Reo Irirangi O Aotearoa* (a.k.a. Radio New Zealand International): 17680 at 1900-2200, 0000-0200, 0400-0700. Alternative frequencies on short notice: 9850, 17730, 17705, 15485 (via John Carson, OK)

 RNZI has pleasant style, good coverage of South Pacific; next to nothing about the Samoan hurricane appeared on U.S. media; but a newscast was repeatedly interrupted by a phone ringing (Harold Ericsson, CA)

Print Disabled Radio, Levin, should be on now, 3935 until 1000 with a one-kW US-made transmitter, inverted V antenna, relaying 2XA on 1602 kHz; overseas reports welcome if return postage and self-addressed envelope included to: Box 360, Levin 5500 (Mick Ogrizek, Radio Australia *DX Time*)

NICARAGUA La Voz de Nicaragua still heard on 6098.64, from 1030, apparently not the same station as La Voz, on 6001.9-variable, which is best heard after 0500, as late as 0604, or past 0730 (Ernie Behr, Ont., RCI *SWL Digest*)

PALESTINE (non) Al-Quds Radio is using unannounced 5990 at 0600-1100, 1300-1700 (BBCM)

PERU Radio Mundial is new from Cascas, Contumaza, Cajamarca, on 4182.2 or 4183.3 kHz, from 1030 to 0325. Radio San Mateo is the new name for Radio Contumaza, from Contumaza, Arequipa on 4495.1 heard at 2342-2355. OAZ5D is a new 1-kW station authorized on 3280 from Quilcapata, Ayacucho, Huamanga, Ayacucho (Pedro F. Arrunategui, Lima, *Play-DX*)

Ondas del Titicaca reactivated on new 4924.1-variable, heard from 0953 to 1035 including ads for a Bolivian bank (Kevin Atkins, AL, *SWL Digest*)

Radio Norandina, 4461.8, good at 0241; Radio Frecuencia Lider, 4418.5-variable, 0352 past 0400 (Gerry Bishop, Niceville, RCI *SWLD*)

Measurements between 10 and 11 UTC: 6187.47 Radio Oriente; 5097.30 or 5097.13 Radio Eco; 5024.92 Radio Quillabamba; 5015.42 Radio Tarapoto; 4954.00 Radio Cultural Amauta; 4924.11 Radio Ondas del Titicaca; 4859.83 Radio La Hora; 4840.00 Radio Andahuaylas; 4826.27 Radio Sicuani (Chuck Bolland, FL)

PORTUGAL A town destined for worldwide fame if Radio Free Europe/Radio Liberty completes a new transmitter site: Maxocheira, projected for four 500 kW transmitters and six antennas (Board for International Broadcasting)

ROMANIA Furthering its new identity, Radio Bucharest has been renamed Radio Romania International (Tim Hendel and Bill Dvorak) Not to be confused with the RRI in Indonesia

SEYCHELLES FEBA in English: 1458-1600 on 9590, 15330; alternate more evangelical program at 1458-1555 (Saturday 1610, Sunday 1540, Monday 1625) on 11865; 1731-1804 on 11820. FEBA keeps adding obscure languages, such as Chhatisghari, Saturdays 1242-1258 on 15325 (*World of Radio*)

SOMALIA \$50 is ridiculous but is it unreasonable for a third-world station to ask for \$2 to \$5 for a QSL to a DXer whose equipment may have cost more than the entire annual salary of a station worker? (Tim Hendel, FL) Moot now, as Radio Mogadishu domestic and external services untraced for months on 6095, 7200, 9585 (BBCM)

(non) Radio SNM, clandestine on 6251-variable at 1500-1700 (BBCM)

SOUTH AFRICA From May 6, Radio RSA may add an omni-

directional outlet on 9555, in English between 1100 and 1600.

SRI LANKA Deutsche Welle relay, Trincomalee, is now fully operational; English at 0200-0250 on 11965 and 9615. New Tamil clandestine Voice of Eelam, has been triangulated to Trincomalee too, rather than Jaffna, 0200-0300 and 1230-1330 in Tamil, English, Sinhala, varying daily between 7000 and 7025, but didn't last long, disappearing before the Indian troop withdrawal (Victor Goonetilleke, RNMN)

SUDAN Radio Omdurman relaying Radio Juba at 1400-1500 on 11711.2 instead of 9540 or 9550. Radio Voice of Ethiopian Unity at 1900 also on 11711 (BBCM) 11709 at 1410, lively pop music show by female announcer (Victor Goonetilleke, RNMN)

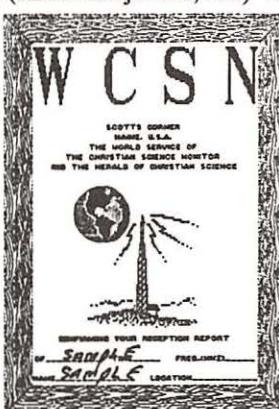
SWEDEN Radio Sweden, English to us at 1530, on new 21500, parallel still BBC-blocked 17880. French and Spanish may be cut to 15 minutes next fall, and Portuguese dropped, while English, German, Russian and Baltic languages expand (*Sweden Calling DXers*) The 0230-3000 broadcast is on 11705, 15295 (John Carson, OK)

SWITZERLAND Swiss Radio International has dropped SSB tests, but has added 11 meters, 25680 to South and Southeast Asia at 1315-1500. Red Cross Broadcasting Service dates are the UTC Tuesday and Friday following the last Sunday of each month through August, at 0310-0327 on 6135, 9725, 9885, 12035 (via Russ Lay, Kevin Klein)



TURKEY Voice of Turkey will complete a new site with five 500 kW shortwave transmitters by mid-1992 at Emirler, 63 km from Ankara, with 44 curtains and rotatable antenna (Brown Boveri via Larry Miller) Cost will be 57 Turkish gigalira (NewSpot via W Young, DE) English now scheduled: 1230-1300 on 17785; 2000-2100 on 9795; 2200-2300 on 9445, 9665, 9685, 17880; 0300-0400 on 9445, 17880 (TRT) **USA** WRNO now operates: 1500-2100 on 15420, 2100-2400 on 13720, 0000-0300 on 7355, 0300-0500 on 6185. See last month for *World of Radio* times. However, 15420 could be extended to 2400, or 7355 from 2300.

KUSW is authorized for Z-90: 1300-2200 on 15590, 2200-0300 on 15580, 0300-0500 on 9815, 0500-0700 on 6175, 0700-1100 on 6135, 1100-1300 on 9850; alternates are 9850 at 1300-1500, 11695 at 0100-0300 (George Jacobs & Associates) But actually 24 hours only on Saturday night-Sunday morning, and off the air Sunday night. KUSW has been testing a Farsi program on 15590, soon to carry anti-Khomeini programs from a Los Angeles SCA programmer, Radio Seda-ye Iran (Khalil Ladjevardi, CA) Time??



QSLs are not available from Boston HQ, but WCSN will verify with a computer-generated certificate for reports sent direct to volunteer QSL manager E.H. Cockburn, WCSN, P O Box 130, Costigan, ME 04423; fax (207) 732-4741.

WCSN has a new Czech broadcast every second Sunday at 0905-0950 on 9840 (SCDX)

USSR Moscow dominates external broadcasting, so we were pleased to run across Leningrad, in Russian on a Saturday at 0715, on 15580 (gh, AZ)

Former jamming transmitters now carry Radio Voroshilovgrad, Ukraine, on 7245, 15260 (Radio Moscow via BBCM)

VEZUELA Radio Libertador reactivated and occasionally heard on 3245.2 at 1030 (Dave Valko, PA, FT) 3244.9 from 1000 and in the evenings (Chuck Bolland, FL, RCI *SWLD*)

June 6 is radio industry day in Venezuela, so check the shortwave stations for special programming (via Jairo Salazar, *Play-DX*)

Broadcast Loggings

Let other readers know what you're enjoying. Send your loggings to **Gayle Van Horn, c/o Monitoring Times.**
English broadcast unless otherwise noted.

0003 UTC on 7415

PIRATE: Radio Free Willy. Station testing with rebroadcast of July '87 broadcast, "Dr. Dimento show on AM-1000." Off at 0100, to return at 0307 UTC with comedy skits and music -- very well done with fade outs by 0430 UTC. (Harold Frogde, Midland, MI)

0015 UTC on 15115

NORTH KOREA: Radio Pyongyang. Commentary on the outlook for the socialist policy of the 90s, and segment on reunification proposals. (Bob Hurley, Baltimore, MD) (John Carson, Norman, OK)

0030 UTC on 9900

EGYPT: Radio Cairo. Arabic/English. Station sign-on with chimes and Arabic ID as, "Al-gahira," with newscast to follow. (Stephen Price, Conemaugh, PA) Arabic language lesson at 0300 and newscast. (John Carson, Norman, OK)

0030 UTC on 9835

HUNGARY: Radio Budapest. Feature on the Hungarian Ambassador visiting the Vatican and comments on the relations of the two countries. (Betsy Robinson, Clinton, TN) (Bob Hurley, Baltimore, MD) (John Miller, Thomasville, GA)

0030 UTC on 4890

ECUADOR: Radio Centinela del Sur. Spanish. Caught station ID in progress during bandscan. Good signal quality for local commercials and lively Spanish vocals. (Frank Hillton, Charleston, SC) *Welcome back, Franki-ed.*

0035 UTC on 7400

UNITED STATES: WCSN. Exceptional travelogue program through Nigeria, with interviews and a tour through a Nigerian castle. (Robert Rinkewich, Keyport, NJ) "Letterbox" show heard at 2145 on 13770 kHz. (Brian Bagwell, St. Louis, MO)

0050 UTC on 6090

LUXEMBOURG: Radio Luxembourg. Product commercials and musical IDs. Newscast at 0100 UTC, preceeded by pop tunes and weather forecast. (John Miller, Thomasville, GA)

0201 UTC on 12035

SWITZERLAND: Swiss Radio Int'l. "Dateline" show discusses Hong Kong's dealings with the influx of boat people. (John Carson, Norman, OK) Monitored the European Service on 3985 kHz at 0645 UTC. (Tim Johnson, Galesburg, IL) Audible 0400-0430 UTC on 9885/12035 kHz. (Kelly Jennings, Ottawa, IL)

0235 UTC on 17705

NEW ZEALAND: Radio New Zealand. Monitored from 0235-0530 UTC. Programming included gospel music, sports and weather reports from Auckland, world and Pacific news, and special sport features. Excellent signal past 0330 UTC. (Craig Seifert, New Hampton, NH) *Monitored at 0550 UTC on 17680 kHz-ed.*

0240 UTC on 4910

HONDURAS: La Voz de la Mosquita. English/Spanish. English religious programming in progress at tune-in, followed by Spanish at 0253 UTC. (Tim Johnson, Galesburg, IL) Inspirational music and Spanish devotional at 0300 UTC. (Frank Hillton, Charleston, SC)

0258 UTC on 5010

MADAGASCAR: Radio-TV Malagasy. Malagasy/French. Station sign-on at tune-in with guitar interval signal, national anthem, ID, and announcements. Instrumentals and native African tunes. (Charles Edwards, Scranton, PA)

0310 UTC on 6135

SWITZERLAND: Red Cross Broadcasting. Reports on El Salvador's fighting and U.S. AIDS conference. Two ICRC headline stories and Sri Lanka aid campaign for war victims. (John Kokinda, Marblehead, OH)

0400 UTC on 7205

SWAZILAND: Trans World Radio. German. "This is Trans World Radio" ID at the hour into German service of religious music, devotionals and prayer. (Cindy Holmes, Orlando, FL)

0410 UTC on 4910

ZAMBIA: Radio Zambia. African vernacular. Program announcements and ID to intro of native African music. (John Tuchscherer, Neenah, WI)

0500 UTC on 13610

KUWAIT: Radio Kuwait. Arabic. Plenty of exotic Arabic music and IDs. Audible on parallel frequencies 17850/17895 kHz. (Tim Johnson, Galesburg, IL) Monitored from 2300 to 0015 sign-off. (Stephen Price, Conemaugh, PA)

0710 UTC on 6305

CLANDESTINE: La Voz del CID. Spanish. Anti-Castro programming by male/female duo. Additional editorials on Panama's Norlega. Station ID at 0711 UTC. (Frank Mierzwinski, Mt. Penn, PA) (Randy Coyle, Slidell, LA)

0719 UTC on 11855

BRAZIL: Radio Aparecida. Portuguese. Easy-listening music and Brazilian pop vocals. ID breaks between local ads and a time check. (Charles Edwards, Scranton, PA)

1000 UTC on 6105

BOLIVIA: Radio Panamericana. Spanish. Intermittent interference for opening ID and Bolivian vocals. Local morning announcements. (Rod Pearson, St. Augustine, FL)

1025 UTC on 5015

PERU: Radio Moyabamba. Spanish. Native campesino music presented in a DJ format. ID as "Moyobamba Radio" and local time checks. (Frank Hillton, Charleston, SC) Monitored from 1020-1040 UTC. (Walter Sneider, Tyler, TX)

1026 UTC on 5025

PERU: Radio Quillabamba. Spanish. Very good signal for Andean music and station ID at 1027 UTC. (John Tuchscherer, Neenah, WI)

1035 UTC on 4875

BOLIVIA: Radio La Cruz del Sur. Spanish. Religious message and inspirational vocals. Station ID and program announcements at 1100 UTC. (Kelly Jennings, Ottawa, IL)

1140 UTC on 3370

GUATEMALA: Radio Tezulutlan. Spanish. Male DJ with Guatemalan music program. Station ID at 1145 UTC. Audible on parallel frequency 4835 kHz. (Frank Mierzwinski, Mt. Penn, PA) Monitored on 4835 kHz with campesino music from 2345-2359. Station ID at the hour. (Jack Davis, Birmingham, AL)

1300 UTC on 6115

MEXICO: Radio Universidad de Sonora. Spanish. Mexico's national anthem and chorus anthem. Sign-on ID and news bits to musical ballads and Spanish instrumentals. Pleased to hear this one -- now for the QSL. (Charles Edwards, Scranton, PA) Managed to pick up Mexico's Radio Educacion on 6185 kHz at 0700 UTC. (Tim Johnson, Galesburg, IL)

1315 UTC on 9635

AFGHANISTAN: Radio Afghanistan. Urdu. Fair signal quality for sub-continental music to announcement break. Mentions of Kabul and Afghanistan heard followed by flute interval signal at 1330 UTC. (Frank Hillton, Charleston, SC)

1430 UTC on 21550

FINLAND: Radio Finland. "Weekend News Review-Compass North" with segments on strikes in Finland and damage to the Finnish forests from air pollution. (Bob Hurley, Baltimore, MD) (Sam Wright, Biloxi, MS) (John Miller, Thomasville, GA)

1500 UTC on 15245

AUSTRALIA: Radio Australia. Fair signal with interference during Pacific news features. Parallel frequency 9580 audible with excellent signal quality. Sports broadcast on 15160 kHz at 0645 UTC. (Harold Bower, Sunbury, PA) Monitored at 0005 on 17750 kHz. (Kathy Parks, Richmond, CA)

1536 UTC on 21610

SWEDEN: Radio Sweden. Music from Swedish pop group Abba and comments on the Swedish translations of the Bible to "Mailbag" show. (Sam Wright, Biloxi, MS) Heard on 11705 kHz at 0230 UTC. (Kathy Parks, Richmond, CA)

1540 UTC on 6005

CANADA: CFCX. Great music show of "Golden Oldies." Station ID at 1545 UTC. (Frank Mierzwinski, Mt. Penn, PA) (John Carson, Norman, OK)

1600 UTC on 21705

NORWAY: Radio Norway Int'l. Discussion on proposed plan to assist Romania with 1.2 million in aid and developments in oil spill cleanup technology. (John Carson, Norman, OK) Monitored on 11850 kHz at 2309 UTC. (Randy Coyle, Slidell, LA)

1900 UTC on 15450

LIBYA: Radio Jamahiriya. Arabic. Features and readings to Arabic music. Signal observed to be drifting from 15449.8 at 1900 UTC, to 15452.8 at 2105 UTC. (Stephen Price, Conemaugh, PA) Audible in Arabic on 15450 kHz at 2300-2345 UTC. (Brian Bagwell, St. Louis, MO)

2020 UTC on 9950

SYRIA: Radio Damascus. Syrian Press Review and ID. Audible in Arabic on 12085 kHz at 2312 to Spanish service at 2315 UTC. (Stephen Price, Conemaugh, PA) (Tim Johnson, Galesburg, IL)

2035 UTC on 11715

HONG KONG: BBC World Service. News topics from Macau and Beijing on banking and trading to BBC ID. (Harold Bower, Sunbury, PA) Monitored 2004-2010 UTC on 11715 kHz. (John Tuchscherer, Neenah, WI) *English program 0100-0200 on 21715 kHz-ed.*

2145 UTC on 9535

ALGERIA: Radiodiffusion-TV Algerienne. French. Big band jazz program and national newscast. (John Tuchscherer, Neenah, WI)

2200 UTC on 11820

INDIA: All India Radio (AIR). International news and editorial on the importance of multinationals in the Indian economy. Parallel frequency 11620 kHz considerably weaker. (John Miller, Thomasville, GA) Heard also on 15020 kHz at 1305 UTC. (Tim Johnson, Galesburg, IL)

2230 UTC on 7270

POLAND: Radio Polonia. In-depth discussion on Western Europe and the regional cooperation. Jazz program barely audible at 2200 UTC. (Betsy Robinson, Clinton, IL) Audible on 9675 kHz at 0630 UTC with "Mailbag" show. (Tim Johnson, Galesburg, IL)

2255 UTC on 4900

GUINEA: Radiodiffusion-TV Guineene. French. Fair signal quality for announcer's ID and program intros. Musical bridge separated music from news. (John Thomson, Greeneville, TN) Native African music and IDs to sign-off routine at 2359, with interval signal and IDs. (Sam Wright, Biloxi, MS)

2310 UTC on 9560

JORDAN: Radio Jordan. Arabic. Holy Koran recitations and ID. (Stephen Price, Conemaugh, PA) Monitored on 13655 kHz at 0700 UTC with rock music. (John Kokinda, Marblehead, OH)

Utility World

Larry Van Horn
c/o MT, P.O. Box 98
Brasstown, NC 28902

Letters from a Beacon Addict

Just when you thought it was safe to leave the radio, the revenge of the Single Letter HF beacons (SLHFB) pops into your speaker. Well not exactly in the speaker, maybe it is the absence from your speaker that you should be noting. SLHFB expert Keith Russell has noted a big change in one of the Utility World's more interesting mysteries.

By his own admission, Keith says that SLHFB "has been close to an obsession for me over the past few years that hardly a day goes by without the so-called cluster bands plus the clear channel signals K/U/V beacons being checked and the results recorded."

Keith says that the "D" and "P" SLHFBs have left the airways of shortwave. Also, the "C" and "F" beacons have disappeared possibly never to return. He also says that some of the more rarely heard cluster band letters such as "R" for example have also gone with them. Transmissions still being heard within these 4 kHz clusters are "S", "L", "O" and "****".

What's all this fuss about? Well, for years listeners have monitored the spectrum and heard someone, somewhere, sending a single letter Morse code (CW), continuously. Nothing is known about these CW sentinels of the airways. Not much has been written about these beacons as compared to, say, the number stations. The mystery of what purpose they exist for and who runs the beacons is no less as great when compared to the number stations.

Case in point: Keith emphatically disagrees with David White's statement in the September 89 edition of this column that the SLHFB do not originate in the USSR. Keith says, "It would be most easy for me to believe that the signals come from Russia because of the success which I have had with a beverage antenna headed slightly east of the north pole as seen from the US mid-west."

Keith also points out that the Morse Code characters "- - - *" and "* * - -" are Russian Morse Code. (Not quite true, Keith, those are Latin characters that are also used in the Arabic, Greek, Japanese and Russian Morse code alphabets.-ed)

As previously reported in this magazine by Mr. Russell, the "O" beacons change schedule precisely with the summer/winter local time change in western Russia and again in the winter/summer. Keith says he is prepared to accept that the SLHFBs are sited in the USSR or eastern bloc nations.

"It is strange to me how little of the obvious about cluster band SLHFB has appeared in print," says Russell. "While most SLHFB on these bands are the same repetitive signal speedwise," Russell notes that others are simultaneously running at different speeds on different bands.

For example, "O" is a triplet which uses different sending rates on 6804.0, 10646.0 and 13638.0 kHz each time it transmits for a 30-minute schedule once every two hours.

Just to keep the record straight, Keith says the first of those three frequencies is identical to 5308.0 kHz and the third is a repeat of that on 17018.0 kHz. This set of nonidentical triplets was to Russell's knowledge unique. Other cluster band SLHFBS had nonidentical twins, as proven on many occasions when it has been possible to switch back and forth as the two signals aired at the same time. Those which for Russell had been the most easy to find with these characteristics are marked below:

Band (kHz)	O	N	R	Z	L	* * -
5305/5309						
6801/6805	✓					
8645/8649						
10643/19647	✓		✓		✓	
13635/13639	✓	✓	✓	✓	✓	✓
17015/17019			✓			
20991/20995			✓			

Russell has done some timing measurements on these beacons and his contention is that the SLHFBs are ute stations providing an almost constant monitor of water levels at remote locations in rivers, dams, lakes, etc.

locations in rivers, dams, lakes, etc.

Keith's whole premise on these SLHFBs is that the speed at which any given single letter signal is being used as a low tech method of passing to a distant recipient a "measurement" of sorts in real time. It can be easily demonstrated by stop-watch timing the passage of, say, ten letters often over a period of weeks that some show marked changes.

The theory that Russell presents is very persuasively demonstrated by the "V" SLHFB on 7395.4 or 10285.4 kHz. At the close of the day on Tuesday the transmissions slow down dramatically, hold the new slow sending speed about 48 hours, then by Thursday night (GMT) it reverts to a fast sending pace again.

Taking no more than one reading a day for eleven weeks and plotting the data obtained gave a graphical presentation illustrated below.

----- Time in Seconds -----
Russell's guess is that the "V" SLHFB is used to record the regular filling of a reservoir or canal system.

Since Mr. Russell's original communication to me, he believes that the "O" and "L" beacons have gone silent. The only beacons left to hear on the bands are the "S" and "V" beacons.

The most bizarre finding by Russell is that the familiar "K" and "U" beacons have gone silent. Russell says that these utility band regulars are now gone. And I can confirm that, on the regular frequencies that I have monitored over the years, no beacons are on the air. Russell's speculates that perhaps the SLHFB are no longer needed or possibly they have shifted frequency. Maybe they are using a dish and satellite to do the job, whatever that may be.

The west has used a system like this for years through weather satellites with uplinks in the 400 MHz area. It could be possible that with the Meteor 3 weather satellite program, they could have very well moved their system.

I would like to thank Keith Russell for sharing this information with our readers and invite comments. I renew my offer to *Guide to Utility Stations* publisher Joerg Klingenfuss to let us in on how he determined several of the SLHFBs' locations and open the column to David White to present his evidence that the SLHFB are not transmitting from the Soviet Union.

FEMA has Struck a Chord

Several months ago I wrote a little piece on these pages concerning Federal Emergency Management Agency (FEMA). I listed several of the frequencies and one of them was 4790 kHz. Kevin J. Klein just couldn't stand it so he dropped me a line to ask, "Why is the FEMA in the middle of the broadcast band, transmitting code on top of Djibouti. Djibouti is hard enough to get with Carabobo, Colombia, generating co-channel interference, much less the FEMA transmitting their racket on the channel. What gives?"

Well, Kevin, the answer is quite simple. The ITU divides the world into three regions and in a lot of cases each region is allowed to do their own thing. Also, even within a given piece of spectrum several services might be allowed to utilize a given frequency range (i.e. Broadcast, Fixed stations, Land Mobiles, etc). This is the case with 4760 kHz. Just as Djibouti is authorized in its region to transmit on 4760, the FEMA is authorized in our region to use 4760 kHz.

Hope that helps. Just think of it this way: It is just part of the challenge of being a Broadcast SWL DXer. Nothing good comes easy. (Just ask my wife, Gayle. She complains about 4760 every time she sits down at the receiver.)

Achtung . . . German Numbers Located

Peter in West Germany has located some German number stations for our readers who regularly monitor them. Regular German numbers can be heard on 3370 and 4010 kHz during (local) night time hours. Both stations identify themselves at the beginning of each transmission:

3370 kHz "Hier ist DFC37"
4010 kHz "Hier ist DFD21"

Both transmissions originate from transmitters near Frankfurt, West Germany. They belong to the German PTT (Posts and Telecommunications). The organization, however, who is responsible for the transmissions provided by the PTT remains in the dark...

Thanks for the update Peter. I purposely did not reveal your last name and location so the German authorities will not knock on your door. I have heard about the strict monitoring laws in Germany.

AFRTS in Europe Revisited

A friend in England who wishes to remain anonymous has provided this column with information on the Armed Forces Radio and Television Service (AFRTS) utility band broadcast. In fact, this reporter used to work at the transmitter and receiver sites where the transmissions are coming from. The AFRTS transmissions, he says, are in fact coming from RAF Barford St. John, a small sub-base of Croughton, located ten miles away. There are no transmitters located on Croughton.

The transmissions are indeed used for FDM, and carry 16 circuits of teletype information to Lajes in the Azores. One of these usually carries AP and UPI press teletype. The other sideband carries a switchboard to switchboard telephone circuit. The lower lower (that's correct) sideband is usually the one carrying AFRTS.

The signal is received in Germany from a satellite and relayed via microwave to Croughton. It is then re-sent to Barford on another microwave link, and then to Lajes on the Barford transmitters.

The receiving antennas for the Lajes link are four rhombic

antennas, two for under ten MHz and two for frequencies above ten MHz. Two antennas for each frequency provide diversity reception. They have two receivers for each frequency. The audio output of each receiver is sent into a combinator where the strongest signal is selected for use.

For our readers not familiar with this technique, the theory is that a radio signal does not fade at two locations at precisely the same time, therefore, using diversity you will always have a constant strong signal. You can use space diversity -- two different receivers and antennas on the same frequency, or frequency diversity -- two receivers on different frequencies.

I appreciate this gentleman's information and look forward to hearing from him in the future. Another mystery solved by *MT* readers for *MT* readers in the pages of the *Utility World*.

A Message from MARS

I received a very nice letter from the chief of Navy MARS, CWO4 T. Fisk from MARS Headquarters, Washington, DC. It was in regards to the article I wrote in these pages on the MARS afloat network in the November issue of *MT's Utility World*. Thanks for the kind words, Warrant, and if any of you are interested in serving and bringing a little joy to our sailors and marines, you might want to drop a note to Warrant Fisk at the following address:

Headquarters
Navy-Marine Corps MARS Station (NAV)
Bldg. 13 NAVCOMMU Washington
Washington, DC 20390

I am sure they can use all the help they can get, it is a real neat program to work in. By the way, Warrant, I don't have an NTP-8. How about some additional information? I am interested.

What's an Alligator in the Playground?

For several months now a debate has been raging behind the scenes on the Navy's usage of the terms Alligator and Alligator Playground. I think I have the answer but before I put it to bed, I'd like to hear from you, our experts out there in the field. If anybody has an answer for this one, drop me a note at the masthead address, and maybe settle this once and for all. We all would appreciate it.

Update the Update

My goodness, print one list and the world will beat a path to the mailbox to get it updated. I am referring to the new designator list I ran in the February issue. Several of our readers have been busy and provided some new answers and a couple of new designators with no frequencies attached. Here is that update to the update:

W-115	20124	X-906	13217
W-116	20167	P-380	no frequency yet
S-307	no frequency yet	P-381	5700
X-903	6730	P-382	5826

Thanks to all those who wrote. To Tom Redder, don't confuse these designators with the Mystic Star freqs. They still use the Foxtrot series identifiers, not Sierra. I am afraid a complete list does not exist. The reason we think there are over 450 is due to the numbers we hear over the air. If anyone has a good list of the current Mystic Star frequencies, I

would like to hear from you. Mr. UK, I definitely would like to hear from you.

Canadian Designators

I would also like to hear from any military buffs that might have a good list of frequency designators for the Canadian Forces radio network. They seem to be doing their own thing out there and it would be nice to pin some of that down. Also, anybody with information on the Canadian Forces Amateur Radio system is invited to write. I would be interested in a solid frequency and callsign list. The CFARS is the Canadian equivalent to our US military MARS radio systems.

Aerostat Platforms

Aeronautical Communications Handbook editor Bob Evans has a special monitor interest other than aero freqs. He also enjoys Coast Guard monitoring. Bob currently has about 125 QSLs from USCG cutters, aircraft and shore stations. He also has been searching for Bill Battles' elusive Bravo 09, 36, 08 frequencies.

Bob says a couple of years back, he QSLed the Atlantic Sentry -- the first mobile Aerostat platform vessel leased from RCA. These aerostats are big balloons with a radar package aboard that can look over the horizon for aircraft and ships. They are used as part of the US Drug intervention program.

Well now, Bob says that Aerostat 2, 3 and 4 are in use and are active on USCG frequencies. Several weeks ago, Aerostat 4 was working Miami COMSTA on 5696.0 kHz. They were instructed to go to 5481.0 kHz USB. On this frequency they identified as Foxtrot Zero Two and were working Romeo Zero Quebec. The majority of the conversation was scrambled.

Utility Loggings

Abbreviations used in this column

All times UTC, frequencies in kilohertz. All voice transmissions are English unless otherwise noted.

AM	Amplitude modulation	ISB	Independent sideband
ARQ	SITOR	LSB	Lower sideband
CW	Morse code	RTTY	Radioteletype
FAX	Facsimile	UNID	Unidentified
FEC	Forward error correction	USB	Upper sideband
ID	Identification		

2582.0 Motor vessel Cape Charles/Halifax Control via a patch through Yarmouth Coast Guard at 0620 in USB. (Fernandez, MA)

2678.0 1 Lima Xray working St. Petersburg CG group, shifted from 2182.0, talking about mission comms at 0755 in USB. (Fernandez, MA)

3076.5 Out of Band fishing boat, three boats in a net with XXX language about fishing ops. IDs were all first names. Similar net on 3096.0 with same comms. Both on military aero band. (It's a crowded band, guys, but not THAT crowded) In USB at 0805. (Fernandez, MA)

3090.0 Spanish female five-digit number station heard at 0630. (Fernandez, MA)

3258.0 Eight chimes repeated until 0530, then callup, followed by five-digit text at 0532 in German. This transmission consisted of several short texts. (Fernandez, MA)

3924.0 Spanish female number station heard at 0600 in AM in the ham bands. (Michael Elder, Highlands, TX)

4134.6 CGC Campbell working Boston Rescue through COMSTA Boston in USB at 0322 using duplex-4428.7. (Preston Sewell, Franklin, NJ)

4316.0 DGJF sending its call continuously in CW at 0330. (Dix, NY) *Jack, that is the pleasure ship, La Vida I, a German ship.-ed.*

Bob, my lists show nothing for 5481.0 so it looks like you have found a new one that bears watching. Maybe that is one of the Bravos Bill Battles is looking for.

Speaking of the Coast Guard, I wish to apologize to members of the Coast Guard Auxiliary. They are not members of the reserves (as I tried to place them) but are a civilian volunteer organization under the Coast Guard. Probably a good case of work on the brain when I typed that one in the computer. Thanks to the many readers who caught me on this one.

It's Larry's Silver Anniversary

Ah yes, I have really enjoyed it and the love affair continues. There appears to be no end in sight. The mystery, intrigue and excitement I have for radios is still as strong today as it was when I began. I cherish the friendships I have made and the many friendly folks I have met over the years.

Yes, this month is special. It is my twenty-fifth anniversary in the shortwave radio hobby and I am into my third year as editor of this column. This is also my seventh year with the world's greatest magazine, *Monitoring Times*.

I would like to take this chance to thank the thousands of *MT* readers that have taken from their busy schedules to write me over the years. My presence in this magazine would not be possible without you, the reader, the real experts in the world of shortwave radio. So to you, I dedicate my first 25 years in the hobby and I am looking forward to serving you in the future. Let's shoot for another 25. (The Good Lord and Larry Miller willing!) Until next month... hey Rod, let's go get a cubo.

4428.7 COMSTA Boston working CGC Seneca in USB at 0231 using duplex-4134.3. COMSTA San Francisco working P4M in USB at 0632. COMSTA New Orleans working CGC Anacapa at 0633. (Sewell, NJ)

4577.0 US Air Force MARS radio net with various stations including AFA2KC checking in at 0100 in USB. (Russ Hill, Oak Park, MI) *Welcome to the column, Russ. Hope to see you in the pages again.-ed.*

4880.0 Female repeating Uniform India Xray 2 for three minutes at 0300. (Bob Hurley, Baltimore, MD) *Israeli Mossad.-ed.*

4881.8 Female Bulgarian five-digit number station heard at 0700. (Fernandez, MA)

5000.0 Time announcement in Spanish immediately following each time announcement from WWVH from 0555-0600 in AM. (LOL, Buenos Aires?) (Hurley-MD) *Probably.-ed.*

5321.0 CGC Buttonwood working COMSTA New Orleans with three short messages. COMSTA also had messages, would coordinate RTTY freqs when ready at 0310 in USB. (Patrick Kerrigan, Chicago, IL)

5695.0 English female digit number station at 2310. (Fernandez, MA)

6385.0 PPR-Rio de Janeiro Radio, Brazil, with CQ CW marker at 0122. (Art Blair, CA)

6493.0 FUM-French Naval Radio Papeete, Tahiti, with V CW marker at 0837. (Paul Hulse, North Hollywood, CA)

6518.8 Phone Patch between CG Cutter Seneca and Boston Rescue through COMSTA Boston, re-search for ERIRB at 1656 in USB. Full duplex with 6212.4. (Sewell, NJ)

6693.0 RAF Buchan working 5DY at 2338 in USB. Heard testing the PU. Controller said all he was getting was garbled ping pong. (Doyle, CT)

6730.0 Air Force One working Andrews AFB at 0110 in USB. This frequency was primary and Foxtrot 115 upper was secondary. Noted phone patch to the Secretary of State among other things. (Martin Maragni, Deerfield Beach, FL) *Welcome to the column, Martin. Hope you check in often.-ed.*

6748.1 CW five-digit code groups heard at 0844. (Hulse, CA)

6757.0 Andrews AFB working SAM 683 with phone patch for Doral Hotel for info on Congressional delegation arrival. Poor copy, shifted to 6205 then back to 6757. (Robert Montgomery, Levittown, PA)

7360.0 US Army MARS net heard at 1724 in USB with numerous stations including AAR5UY checking in. (Hill, MI)

7415.0 Noted a station sending single letter phonetics ending with Liberty clear at 0540. Then a call at 0545 for all stations to standby for flash traffic. At 0550 noted RTTY on the channel for two hours. (Skip Harwood, Beale AFB, CA) *Skip, I believe this was probably NASA voice SAC.-ed.*

7858.0 German female numbers station at 0110. (Charles Edmunds, Merritt Island, FL)

7985.0 Male with five-digit number station ended with one number repeated five times at 0635. Language sounded similar to Serbo-Croat. Same on 10235 but not a simulcast. (Fernandez, MA)

8457.0 NOJ-COMSTA Kodiak, Alaska, with unclassified traffic to NJSH-CGC Mustang and others at 0401 in RTTY 170/75R. (Art Blair, CA)

8508.0 RIW-Khiva Naval Radio, Uzbek SSR calling RMMV in CW at 0704. (Dix, NY)

8544.0 OMP44-Prague Radio, Czechoslovakia, with a DE CW marker at 0547. (Dix, NY)

8610.0 3DP3-Suva Radio, Fiji, with a CQ CW marker at 0720. (Dix, NY)

8656.0 Unid station repeating VVV K4B in Cw at 1352. (Dix, NY)

8834.0 PQLN calling FRK8 and M5DL with no reply from either in CW at 0231/0236. (Dix, NY) *Anybody have any ideas who these stations are? I see them logged from time to time throughout the spectrum but no one seems to know who these folks are. Looks military to me.-ed.*

8861.0 Dakar Aeradio working Roberts Aeradio with a very heated argument over who cleared Springbok 232 to flight level 39 (apparently Roberts said 39 was fine). After a while the Springbok operator refused to answer after repeated calls at 2357 in USB. (Doyle, CT)

8931.0 FDI-French Air Force Als Les Milles, France, with a V CW marker at 0516. (Dix, NY)

8983.0 Miami COMSTA operations working Rescue 1437. Dropped buoys on frequency 240.6 at 1400 local in USB. (Montgomery, PA)

8993.0 Air Force 7 working MacDill talking about rooms at Best Western for crew members. At least the Air Force is watching their budget. (Montgomery, PA)

9023.0 A sweeping jammer by NORAD on a Spanish BC station on 9022 (*Kol Israel-ed.*). This jamming has been going on for the past year, due to stations interfering with NORAD exercises on 9023 in USB at 2135. (Fernandez, MA)

9365.0 Spanish female five-digit number station at 0320. (Fernandez, MA)

9956.0 EXK57-Possible Russian station calling UZH3 telling them to QSX 9332 in CW at 0105. (Dix, NY) *Jack, my ITU call sign book doesn't list either call sign.-ed.*

10125.0 Female English accented operator repeating CIO2 at 0005 (Saturday) in USB and parallel with 6745. (Doyle, CT) *Israeli Mossad intelligence number station.-ed.*

10235.0 Male five-digit number station at 0650. Sounded like Serbo-Croat. See 7985.0. (Fernandez, MA)

10359.0 English female 3/2 digit number station at 0318. (Fernandez, MA)

11463.0 English female 3/2 digit number station at 0713. (Fernandez, MA)

11528.0 No ID but made request for shipment of grain then went green in USB. (Montgomery, PA) *Time, Robert?-ed.*

12662.2 7TAB-Algers Radio, Algeria, with CQ CW marker at 1552. (Blair, CA)

12840.0 JMC/JMC2/JMC5-Tokyo Radio, Japan, with a CQ CW marker at 1150. (Dix, NY)

12936.0 HLG-Seoul Radio, South Korea, sending a CQ CW marker at 1146. (Dix, NY)

12950.0 Mossad number station, female with Victor Lima Bravo 2 repeated at 0634. (Fernandez, MA)

12975.0 VWM-Madras Radio, India with a CQ CW marker at 1208. (Dix, NY)

13204.0 SAM 270 working Andrews, gave antenna heading, then switched to 370 upper (not on 13370). (Fernandez, MA)

13205.0 Alitalia 877 calling Berne Aeradio, he pronounced it (phonetically) as Bear-nah, with no reply. Even better was one minute later at 2224 an HLA 01 calls the same station with position as Angola, Africa. HLA 01

13212.0 made four more calls saying he was on 13 upper in USB. (Doyle, CT)

13217.0 Midship calling Bugle Boy, nothing heard then switched back to 9018.0 where contact was made, and told to maintain that freq at 1343 in USB. (Kerrigan, IL)

13254.0 Halifax Military with weather broadcast for terminals across Canada, ending at 2130 then into RTTY mode. (Fernandez, MA)

13378.0 KKN39-Department of State Radio, Washington, DC with CW QRA marker at 0427. (Elder, TX)

13630.0 FAA stations KDM45-San Juan, Puerto Rico, and KDM49-Regional office discussing high wind condition 4, number of personnel unable to report due to high winds, roof off offices, and water damage to switcher. Operators also discussing damage to aircraft and terminal. Noted at 1251 in LSB. (Dix, NY)

13944.5 Meissen, East Germany, seems to be a security net for East Germany. Shift changes would be the correct time for all stations to respond. Heard at 1400 in USB. (Gregory Dome, San Antonio, TX)

14443.0 Angry Warrior and View Finder 2 discussing frequencies and Air Force invoices at 0045 in USB. Have also heard them on 19015.0 Whozit? (Blair, CA) *Don't knowzit.-ed.*

16852.0 Two unid stations working simplex with plain language messages in English-reports from provinces badly hit areas from a typhoon with a large number of people homeless. Place names mentioned were Basco-Cabayan-which are in the Philippines. No call signs or identity information heard at 2132 in CW. (Dix, NY)

16907.7 TFA-Reykjavik Radio, Iceland, sending a CQ CW marker at 1352. (Dix, NY)

17064.0 UAT-Moscow Radio, USSR, heard at 1213 with a CQ CW marker, said QSX 16708. (Dix, NY)

17077.0 UAH-Tallin Radio, USSR, heard at 1302 with a CW CW marker. (Dix, NY)

17170.5 ZLB-Awaura Radio, New Zealand, heard at 1515 sending a CW marker stating ZLB HF is closed. (Brian Webb, Thousand Oaks, CA)

17189.6 D3E51-Luanda Radio, Angola, sending CQ CW marker at 1452. (Webb, CA)

17197.4 9VG-Singapore Radio, Singapore, with ARQ Idler and call sign only CW marker at 1620. (Webb, CA)

17207.0 NMC-Coast Guard COMSTA San Francisco, California, heard at 2107 with ARQ Idler and call sign only CW marker. (Webb, CA)

17210.4 NMN-Coast Guard COMSTA Portsmouth, Virginia, sending ARQ Idler tones and call sign only CW marker at 1315. (Webb, CA)

17211.4 WLO-Mobile Radio, Alabama, with ARQ Idler and callsign only CW marker at 0437. (Webb, CA)

17223.9 WLO-Mobile Radio, Alabama, heard at 0452 sending a ARQ Idler and CW call sign only marker. (Webb, CA)

17952.0 Slingshot working Coffee Table at 2023 with track information in USB. (Doyle, CT) *US Customs Service.-ed.*

17966.0 Female English accented operator repeating CIO2 at 1714 in USB. (Doyle, CT)

18655.0 An unid station continuously sending 786 786 786 1 in CW. (Dix, NY)

19525.0 Demon Flyer working Taco 1, Alexander and Draco. Regular use of encryption, often made mention of support HC-130 aircraft. Heard in USB at 0300. (Edmunds, FL)

20186.0 Ascension Is. USAF MUX signal with Space Shuttle Colombia mission comms to Houston. Heard at various times in USB. (Kopinda, OH)

22428.0 9VG59-Singapore Radio, Singapore, heard at 0111 with CQ CW marker. (Dix, NY)

22460.9 FUJ-French Naval Radio Noumea, New Caledonia, sending a V marker at 0143. (Dix, NY)

22465.0 9MG-Penang Radio, Malaysia, heard at 1831 in CW sending a CQ marker. (Dix, NY)

22472.0 NMO-Coast Guard COMSTA Honolulu, Hawaii, with area weather broadcast in CW at 0114. (Dix, NY)

22485.0 VIX-Sydney Radio, Australia, with CQ CW marker and weather from Melbourne to all ships, weather reports followed. (Dix, NY)

22533.0 ZLB-Awaura Radio, New Zealand, heard at 0123 with a DE CW marker. (Dix, NY)

The Scanning Report

Bob Kay
c/o MT, P.O. Box 98
Brasstown, NC 28902

Simplex or Duplex?

I'll be the first to admit that I don't give a darn about the type of signal that I'm monitoring. As long as I can hear the action on my scanner radio, I'm happy. Sound familiar? I knew it would. My mail indicates that approximately 80 percent of you could care less about simplex and duplex signals. Ditto for intermediate and image frequencies.

Still, these terms are part of our world -- the scanning world. Understanding simplex and duplex signals is about as elementary as learning to tie your shoes. To scan like a pro, you must master a few of the basic rules of scanning. These rules are not difficult to learn, and if you will stay with me for a few more paragraphs, I'll show you just how easy it is to become a "Scanning Master."

Last month I mentioned that the cordless phone base transmitted on a duplex frequency. When we hear the word "duplex," many of us instantly become perplexed. But the difference between a duplex signal and a simplex signal is quite simple. When you talk on a cordless phone, that's full duplex. Why? Because you can talk, listen or interrupt the other person at any time. The cordless phone base makes all this possible by transmitting a duplex signal. However, the cordless phone handset transmits a simplex signal.

Now, don't start complaining and give up. Hang in there. From this point forward, learning the difference between simplex and duplex will be entertaining.

To understand the nature of a simplex signal, punch the following cordless handset frequencies into your scanner radio: 49.670, 49.845, 49.860, 49.770, 49.875, 49.830, 49.890, 49.930, 49.990, 49.970. As you listen to these frequencies, you will immediately notice that only one side of the cordless conversation can be heard. Now you understand the meaning of a simplex signal.

To hear both sides of the conversation, simply monitor the duplex frequencies of the cordless base unit: 46.610, 46.630, 46.670, 46.710, 46.730, 46.770, 46.830, 46.870, 46.930 and 46.970. Go ahead and try it. It's an easy "hands on" lesson that everyone can do at home.

The world of simplex and duplex signals becomes a little more complicated when we consider that there are "one frequency" and "two frequency" simplex systems. Seasoned scanner buffs will probably recognize yet another term: "semi-duplex." To learn more about these and other types of radio signals, check out your local library or visit your nearest ham radio outlet store.

The "Intermediate Frequency" or "IF" of your scanner radio can usually be found in the instruction booklet. Generally, the "IF" will be 10.7 or 10.8. Before the days of continuous-tuning scanner radios, knowing the "IF" permitted hobbyists to monitor U.S. government frequencies.

Here's how it worked. The older scanner radios could not be programmed between 406.00 and 420.00 megahertz. To monitor a federal agency on 412.00 MHz, the listener simply doubled the "IF" (2×10.7 or $10.8 = 21.4$ or 21.6) and then added the sum to the frequency. (21.4 or $21.6 + 412.00 = 433.40$ or 433.60). The resulting image frequency was in the 433 megahertz range and although the signal wouldn't be all that great, it was better than nothing.

Do cordless phones operate on a simplex or duplex frequency? To find the answer, check out the Scanning Report.



In today's world, the continuous tuning scanner radio has eliminated the need to tune image frequencies. But even with our sophisticated high-tech scanner radios, we still need to understand the mathematical formula for finding an image frequency. Why? Because it can help us to verify our frequency lists.

Suppose that you hear a commercial pilot talking on 143.940 MHz. As most of you know, the civilian air band is between 118.00 and 135.00 MHz. So how did the pilot's transmission get on 143.940 MHz? This is also called an "image" frequency. To prove it, simply double the "IF" of your scanner radio and subtract it from the frequency in question. It's another quick and easy way to verify all of your "questionable" frequencies.

Another interesting set of rules that everyone can use is the "pairing" of frequencies between 450.00 and 470.00 MHz. Suppose that you heard a taxi cab driver on 470.40 MHz. However, the response from the base station could not be monitored. Where would you look to find the base frequency? Between 450.00 and 470.00 MHz paired frequencies are separated by exactly 5 megahertz. The base can always be found on the lower frequency. By subtracting 5 megahertz from 470.40, the base operating frequency could be found on 465.40. Get the idea?

Between 470.00 and 512.00 MHz, paired frequencies are 3 MHz apart and the base is on the lower frequency. Between 806.00 and 896.00, paired frequencies are 45 megahertz apart and the base is on the higher frequency.

The above rules are just a few of the "trade secrets" that are used by all of the pros. By learning to apply them to your everyday scanning adventures, you can also become a "Scanning Master."

Treasure Hunt

For the May/June Treasure Hunt, Bob Grove has donated his world-renown "Scanner Beam" antenna. As most of you know, the Scanner Beam provides unexcelled coverage between 30 and 960 MHz. Best of all, the Scanner Beam can be used with an inexpensive TV antenna rotor for monitoring those elusive low-power signals.

Personally, I use the Scanner Beam and a rotor to tune in on cordless phone calls. However, the antenna performs quite well in a fixed position. Although signals arriving from the sides and back will be slightly attenuated, you won't miss any of the action! Here are the clues:

1. In the February 1-April 30 Grove Catalog, what page features the "Scanner Beam"?
2. What year was the Electronic Communications Privacy Act passed into law?
3. Name the woman on page 90 of the February 1990 *MT*.
4. As of January 1, 1990, the civilian aircraft band will include 136 to 137 megahertz. True or false?
5. Provide a frequency for the Space Shuttle between 250 and 260 megahertz.

If you can't wait to find out if you're our lucky winner, the Scanner Beam can be ordered direct from Grove Enterprises. Send \$59.95 to P.O. Box 98, Brasstown, NC 28902. Can't find the answer to a particular clue? Drop me a line -- I'll bend the rules and provide you with some additional hints.

Frequency Exchange

Are you ready to go flying? John Jenkite has provided an 8-1/2 by 11 inch U.S. map that contains the weather and metro operating frequencies for military aircraft. By glancing at the map, it's easy to discover the weather and metro frequencies for over 150 military air bases. Here's an example: NAS Norfolk-271.600, NAS Jacksonville-344.600, Offutt AFB-342.500, Travis AFB-375.200.

The map also features an altitude chart that provides the optimum reception ranges at various altitudes. Apparently, the map was intended to serve as a reference guide for military pilots. To receive your copy of the map, without folds or creases, an SASE is not necessary. Simply put three bucks in an envelope and ask for the "Military Map." Send your requests to the Frequency Exchange, P.O. Box 98, Brasstown, NC 28902.

Since we're already airborne, let's touch down and check out the frequencies at NAS, New Orleans:

138.70	Security Channel #4 (Navy Police only, simplex rptr)
140.82	Security Channel #1 (All police, including air force)
140.10	Crash crews, control tower, fire department
163.4875	National Guard

The above list was submitted by G.J. Forbin. G.J. also provided the following miscellaneous frequencies for the city of New Orleans:

450.5125	Media
156.45	RCA Corporation
426.025	RCA Corporation
164.9875	NASA
173.7375	NASA
164.175	Postal Service

As we become airborne again, let's fly over Florida and check out Steve Schmidt's Game and Fish Commission frequencies.

Florida Fresh Water Fish Commission

151.385	F-1 (Primary)
151.160	Mobile
151.310	F-2



After the May/June Treasure hunt is completed, this could be you putting up your own Grove Scanner Beam!

151.415	Orlando
151.430	Repeater
160.14	Orlando area
160.425	Tampa and Lake Okeechobee area
161.445	Lake Okeee area
172.275	Link to U.S. Park Service

Anyone care to "buzz" past Fort Bragg, North Carolina? Richard Garner from Spring Lake has provided the following:

32.50	Range Control	150.45	Ambulance
38.90	Range Control	150.50	Ambulance
40.60	Army Helicopter	163.375	Hospital Paging
40.50	Search and Rescue	165.0375	Engineers
41.075	Range Control	165.0625	Wildlife Officers
49.70	Bomb Squad	165.087	Fort Bragg Fire
49.80	Bomb Squad	165.1875	Engineers
141.025	Bomb Squad	413.4225	CID
142.500	Range Control		

If you get air sick or don't like to fly, please depart the airplane after we land at Charlotte, North Carolina. As we take on fuel and await our departure clearance, take a peek at the following four page list that was sent in by G.W. Hollen.

42.08	South Carolina Highway Patrol
42.10	South Carolina Highway Patrol
42.12	South Carolina Highway Patrol
42.56	North Carolina Highway Patrol
42.64	North Carolina Highway Patrol
42.72	North Carolina State Bureau of Investigation
453.65	Iredell Sheriff
453.10	Lincoln Sheriff
453.9750	Cleveland Sheriff
154.86	Rutherford Sheriff
155.01	McDowell Sheriff
154.81	Buncombe Sheriff
155.325	Charlotte Memorial Hospital Helicopter

To receive a fresh copy of all four pages, simply include a business size SASE with your request. That's right, the list is free! But you must hurry. Letters that are postmarked after May 31 must include two dollars to defray the cost of copying.

For those of you who remained on board, our next stop is Glasgow, Scotland. (Hey, I warned you to get off in North Carolina.) Dom Hamrick from Wilburn, Arkansas, is a

Merchant Seaman. On a recent trip to Glasgow, he came across a frequency allocation table that was labeled "Re-Engineered UK Allocations for Bands 1 and 3." While I'm not certain of the term "Re-Engineered," I thought that everyone would find it interesting.

UK Listings

Frequency(MHz)

49.00	An unspecified 500 kHz to be allocated into fixed paging services at 49 MHz from 1987
SIMPLEX	DUPLEX (where used)
174.00-174.50	Fixed Communication Links for Emergency Services (UK Landbased)
174.50-176.50	Private Mobile Radio (PMR), Simplex
176.50-183.50	Private Mobile Radio, Base Transmitters
183.50-184.50	Private Mobile Radio, Simplex
184.50-191.50	Private Mobile Radio, Mobile Transmitters
191.50-192.50	Private Mobile Radio, Simplex
192.50-199.50	Private Mobile Radio, Mobile Transmitters
199.50-200.50	Private Mobile Radio, Simplex
200.50-207.50	Private Mobile Radio, Base Transmitters
207.50-208.50	Private Mobile Radio, Simplex
208.50-215.00	Private Mobile Radio, Base Transmitters
215.50-216.50	Private Mobile Radio, Simplex
216.50-223.50	Private Mobile Radio, Mobile Transmitters
223.50-225.00	Private Mobile Radio, Simplex

N.B.: PMR to operate at 12 1/2 kHz channeling, commercial cordless phones and data handling to be permitted.

Well, I hope that someone on board can fly this thing, because that wraps up this month's Frequency Exchange. Have a happy landing.

Photo Busting

If you have been following the previous columns, you already know that Photo speeding tickets have stirred a great deal of interest. At least one company is manufacturing a "PHOTOBUSTER" license plate frame. According to the ad that I received, the license plate frame has a special protector lens that cannot be photographed by a radar camera. Since I don't know if the frame actually works, I won't print the name of the company. However, I'll send you all the info for an SASE.

Nuclear Scanning

In Boston a business man has been scanning the Seabrook nuclear power plant. Fred Anderson recorded Seabrook operators discussing their "bad feeling" about a set of valves. He listened to security guards talking about workers, and he heard a plant operator making personal statements over the air.

The Seabrook owners say they meant to scramble their communications, but somehow that was never done. The Nuclear Regulatory Commission is investigating the incident and contemplating whether to change radio security regulations for all nuclear plants.

Okay, gang. You all know the obvious question. What is the frequency? If you have it, send it in and let's share it. I'll also accept frequencies for other nuclear and nonnuclear power plants in your local area.

Taxi Cab Scanning

The cab drivers in Worcester, Massachusetts, are in trouble with the chief of police. The chief wants to ban all scanner radios from city cabs. It seems that the cab drivers monitor the calls of other cab companies and then "steal" their customers.

People who ride the cabs aren't complaining. The service is quick, and it's not uncommon for several cabs to arrive for one customer. The chief, however, is growing tired of having to break up the brawls that ensue between rival cab drivers.

Digital Cellular

Two cellular companies have announced a breakthrough in Digital Cellular phone systems. PacTel Cellular and Qualcomm Inc. are currently using a van fitted with digital cellular phones to promote the many advantages of the new system.

The digital cellular technology provides increased channel capacity, fewer cell sites, improved voice quality and complete privacy.

Digital cellular will be impossible to monitor because the calls will be spread across a wide segment of voice channels. Current cellular technology places every call into a single voice channel -- permitting the monitoring of one particular frequency.

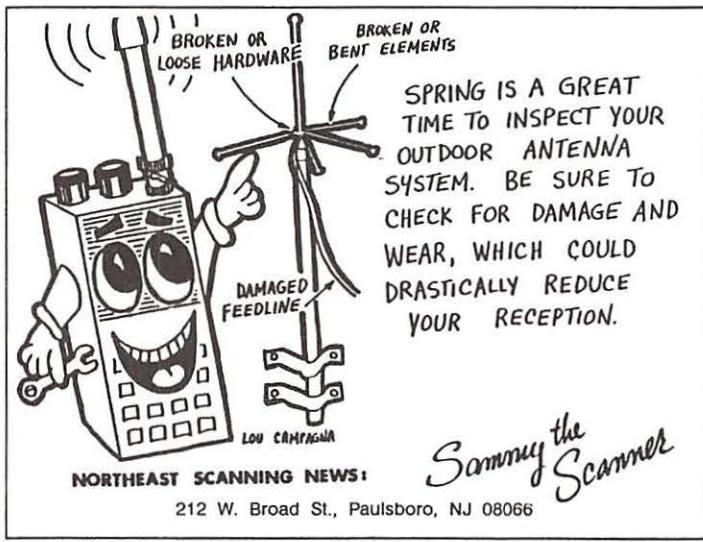
But don't get discouraged. Before digital cellular can become a reality, the major cellular companies will have to agree on one specific type of digital system. Getting all the cellular companies to sit down at the same table would be a difficult task in itself. Forcing them to accept a single type of digital network seems ridiculous, if not impossible.

PRO2004 Owners, Take Heart

Owners of the Radio Shack Realistic PRO2004 scanner who found that they could not get them repaired will be pleased with this update. According to a conversation Bob Grove had with a Radio Shack repair center, new circuit boards are now available through your local Radio Shack dealer.

Next Month

If you are planning to go on a vacation this year, don't miss next month's column. I'll explain some of the techniques that radio savvy burglars are using to discover that you're not at home. In the meantime, check out the Treasure Hunt, solve the clues and send in your answers. You could be the lucky winner!



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what's new?

Vladimir Posner Parts with Illusion

To millions of American TV viewers, Vladimir Posner was the Soviet Union's cold war "color man," a New York-accented character who was brought out to rationalize and apologize for the behavior of the Soviet government on such popular programs as "Nightline" and "Donohue."

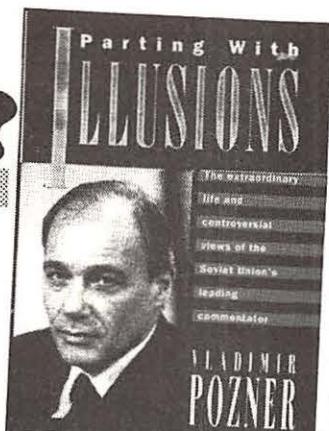
There, given the legitimacy of a "journalist" by the hopeful American press, he would defend the war in Afghanistan, rationalize the Berlin Wall as a "quick fix" and tell the nation in 1985 that "[Jewish] people don't want to leave [the Soviet Union] anymore."

Shortwave listeners, however, knew Vladimir Posner's game long before America got to see his face.

Born in France and raised in the United States, Posner began his on-air career as the American voice on the North American service of Radio Moscow. Despite this (and the fact that he also worked for *Soviet Life*, the English language propaganda monthly that is distributed in the U.S.), Posner shows annoyance when people call him a propagandist.

He attributes that slander to maliciousness or mindless anti-Communism and, according to a *New York Times* article, hopes that when Americans come to see him "as a normal, authentic, honest person, an honest Soviet," they will begin to question America's military spending, the cold war, and anti-communism. You can't fault the man for never giving up.

Parting with Illusions is the story of Posner's life, that, while it gives a rare insight into the life of this well-known shortwave personality, is in the end a mixed bag — mostly because of his refusal to take the mask



off for more than a minute at a time and his insistence on proving 200% that he is just like us.

Parting with Illusions is available in hardback from DX Radio Supply for \$19.95 plus 1.55 book rate or 2.80 UPS.

Pirate Radio Stations: Tuning into Underground Broadcasts

Last year, Tab books announced that Andrew Yoder's *Pirate Radio Stations* would be out in the fall. And each time the company came to a release date, they postponed it.

In fact, *Pirate Radio Stations* was postponed so many times that at least one dealer gave up trying to sell the book and sent the customers' money back. "It was a joke," he says on condition his name not be used, "Tab wasn't even together enough to return our phone calls."

Well, six months after it was promised — but only after an ownership change at Tab — *Pirate Radio Stations* has finally appeared. Regrettably, the manuscript, which the author says he submitted to Tab in December of 1988 shows signs of being out of date. But any lack of timeliness is easily offset by author Yoder's excellent research and superb writing.

The book features an excellent history of pirate radio, an "inside" look at some individual stations, as well as chapters on pirate pranks, Europirates, station profiles, how to QSL, the requisite section on receivers and antennas, and more.

In the end, *Pirate Radio Stations* is a great read despite the bad handling it got from its publisher and remains a must for anyone even remotely interested in this facet of radio monitoring. "Pirate Radio Stations" is available from DX Radio Supply, P.O. Box 360, Wagontown, PA 19376 for \$12.95 plus 1.20 book rate or 2.30 UPS.



M Street Journal 1990 Edition

For years, the leading directory of AM and FM stations in the North America was the *Broadcasting Yearbook*. Indeed, it told you everything you wanted to know about radio — and TV and cable and advertising agencies, etc., etc. — in North America. Unfortunately, its price, — somewhere around \$90 — put it out of the reach of most radio hobbyists.

Last year, the publishers of the *M Street Journal*, a hot, weekly tip sheet on the radio industry, began publishing their own "yearbook," leaving out the TV stations, advertising agencies, etc., etc., and the \$90 price tag. The book was very well received. Now comes edition number two.

Radio stations in the U.S. make some 250 changes a week. That makes it an industry that's tough to track but the *M Street* crew manages to do it. The 1990 edition of the *M Street Radio Directory* includes station calls, frequency, power, ownership, address, format, and even ratings. Another list, arranged by call letters, is helpful for DXers digging out weak signals. And yet a third list,

arranged by frequency, offers further help to the hobbyist.

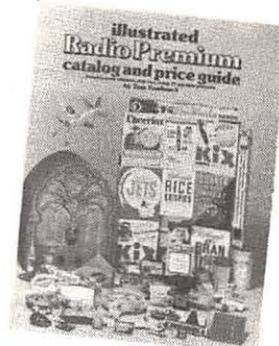
The new 1990 *M Street Radio Directory* is scheduled to ship in late May and lists at \$29.95 plus shipping; however, if your order is postmarked before April 30, you can get the book from DX Radio Supply for \$24.95 plus 1.55 book rate or 2.80 UPS. Their address is P.O. Box 360, Wagontown, PA 19376.

Cracking the Cuckoo's Egg

Reading like a captivating novel, *Cuckoo's Egg* is actually a documentary of the cloak-and-dagger trail leading to the German spy ring which preyed on the U.S. computer industry.

It all began when a computer manager discovered a \$.75 error on his program, alerting him to the presence of an intruder on the system. The months that followed laid the final trap which was sprung on the international hacker.

The Cuckoo's Egg is written by Clifford Stoll and can be ordered for \$24.95 postpaid from Advanced Electronic Technologies, Suite 173, 5800A N. Sharon Amity Rd., Charlotte, NC 28215.



Old Time Radio

During the early years of radio, programs like Buck Rogers, Amos 'n Andy, Fibber McGee and Molly, Jack Armstrong (The

Uniden Public Service Scanner



A number of readers have inquired as to why we have not reviewed the new Uniden MR8100 scanner. The reason is that it is not available through Uniden scanner dealers, only through two companies which exclusively import it for use in public service vehicles such as police, fire and related applications.

The \$500 scanner features a ruggedized, flat-panel control box and scans at up to 100 channels per second. Frequency coverage is 29-54, 118-174, 406-512 and 806-956 MHz (including cellular).

100 memory channels are stored in ten banks. There is no search capability. A dual-conversion receiver, the intermediate frequencies are 10.85 MHz and 455 Hz. Audio power is 3 watts into a separate speaker (included).

Intermod rejection is 60 dB at high band; adjacent channel rejection (25 kHz separation) is 70 dB. Dimensions are slightly smaller than 8" W x 6" H x 2" D. Weight is 4-1/2 pounds.

Scan resume delay is 2 seconds; there are also priority and lockout provisions. An external antenna (not included) attaches via a BNC connector.

A supervisory function allows field programming which cannot be altered by unauthorized personnel. The display is a backlit dot-matrix LCD.

For additional information, contact Page-Com, 10935 Alder Circle, Dallas, Texas 75238 (1-800-527-1670).

All-American Boy), and dozens of others, produced a prodigious amount of promotional items. These ranged from decoder rings, magic tricks, and countless autographed pictures (one from the Lone Ranger advises kids to "Let safety be the rule...for the honor of your school."), to toy guns, stamp pads, badges and statues.

In the intervening years, a strong market has grown up for these pieces of radio memorabilia and the *Radio Premium Catalogue and Price Guide* has become its guide. A 160 page, 8-1/2 x 11 inch hardback that is packed with photos, "Radio Premiums" is a delightful trip down memory lane. It's great reading and a fascinating look at radio's Golden Age.

Radio Premiums is available for \$14.95 plus 1.55 book rate or 2.80 UPS from DX Radio Supply, P.O. Box 360, Wagon-town, PA 19376.

Logging and Analysis Program

Jim Baughn, who calls himself "The Computer Handyman," has developed what he calls the Communications Intelligence Gathering and Analysis Program (CIGAP).

It has been written, says Jim, "to assist those interested in determining the purpose and origin of various signals heard on shortwave and scanner frequencies."

Howzitdun? Jim says it happens this way: A logging section is used to record date, time, frequency emission type, call sign, location, signal quality and up to fifty-nine characters worth of comment. The analysis section allows sorting, selecting, searching, editing and listing, to either the screen or printer.

Hey Scanner Freqs!

SCANNER MODIFICATION HANDBOOK



A collection of 20 scanner modifications developed, refined and tested by communications engineer, Bill Cheek. Photos and charts accompany the step-by-step directions. Easy enough for the average amateur hobbyist. Just \$17.95.

The CITIZEN'S GUIDE to SCANNING

Police and fire scanning are exciting, but how about eavesdropping as the Secret Service prepares for a Presidential visit? Or hearing the coach call the plays or your neighbors' phone calls? Bob Kay, popular MT columnist, makes scanning easy. Priced right, \$12.95.



SCANNER LISTENER'S HANDBOOK



A thorough treatment of the scanning hobby by Ed Soomre. Covers everything from getting started to receivers and antennas to computer controlled monitoring and monitoring laws. On sale through May, \$12.95.

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For example, all entries with the word "beacon" in the comment field may be selected and listed. The resulting list would show information about all beacon stations that have been logged.

The cost is \$29.95 and the program is available on 3-1/2 or 5-1/4 diskette for IBM compatible computers. Further information is available by writing P.O. Box 503, Carmel, IN 46032-9867.

ten to 20 times more. "We used virtually every state-of-the-art technique to reduce size and increase performance," says Marketing Director Bill Owen.

The '2210-A is encased in a high impact aluminum housing for maximum emi-ri shielding and rugged field use. It's manufactured domestically and carries a one year warranty.

To order, contact your favorite radio dealer or Opto: 5821 NE 14th Ave., Fort Lauderdale, FL 33334 or call 1-800-327-5912.

Wide Range Frequency Counter

Optoelectronics has released their new 2210-A, a frequency counter with the incredible range of 10 Hz to 2.4 GHz. It measures 4x3.5x1 inches and weighs only 9 ounces. Resolution is 1Hz (10Hz - 12MHz) and 100Hz (10MHz - 2.4GHz).

Priced at just \$219, the 2210-A easily outperforms classical instruments costing



Uncle Skip's Dandy Do-All DX Dipole

One of the neatest side rewards of writing for a magazine is that you get all sorts of mail from folks. What is more amazing is that people have very long memories. I have written for three different publications over the years before making the big time and joining the staff of *Monitoring Times*. Would you believe I still get mail from folks who remember that I once gave some good advice way back when, in the dusty pages of some old radio journal or another?

As I set about answering these letters, I have to remember that, no matter how many times I have heard a particular question or problem before, that question is really important to that person writing to me.

What does this have to do with dipoles, Uncle Skip?

Easy, Ace! When I look back at the most commonly asked question of my radio sage career, it would probably go something like this... "Dear Uncle Skip. What is the absolutely best antenna I could possibly put up for listening to all kinds of radio? P.S. It has to be cheap!"

Get the picture? When most folks, especially beginners, peruse the pages of radio magazines and catalogs, they see all manner of antennas for performing all sorts of functions, costing all kinds of money. Things get pretty confusing real quick like. You can easily drop the price of a good used car on an antenna installation. The simple fact is that most folks don't have all that much money to put out.

But perhaps more importantly, most

people don't want their property to look like a giant pin cushion. Practical considerations dictate one simple antenna structure. If you could only put up one antenna, you're going to want to have a chunk of wire that is going to get the job done over a wide range of frequencies.

Well, Old Uncle Skip has come up with an antenna system that has served him in good stead across the HF bands for shortwave listening. In fact, this antenna is so good that it can also be used for transmitting! It utilizes a blend of simple and traditional radio lore that can be applied in almost every case without too many complications and considerations. This antenna is also relatively unobtrusive, making for happy neighbors in places where esthetics rule the day.

Without further verbiage, let us consider...

UNCLE SKIP'S DANDY DO-ALL DX DIPOLE

A simple dipole antenna has only three main parts. Two wire elements (usually of equal length) and a feedline which would be known as the transmission line if you were operating a transmitter into those antenna elements. Sounds easy enough, right? Throw up a couple of chunks of wire and hit the dials? If only life were really that simple.

To create the best circumstance for receiving or sending with that antenna, it should be "tuned" or resonant on the frequency of operation. In other words, any antenna will only be useful over a fairly

narrow band of frequencies unless we give it a little help.

As a shortwave listener or ham, you will probably want to operate over the entire range of frequencies you have access to on your equipment. Does that mean you need to put up dozens of different antennas to enjoy our hobby? Not really. You can use an antenna tuner to bring a dipole into the ballpark, especially if you use the right kind of feedline.

Now the theory behind how this works fills a few books and *MT* only gives me two pages, so you will have to take some of this stuff on faith because, for now, we want to concentrate on the construction action. If you crave more theoretical detail than what follows, please write with your questions so I can point you toward the right textbook.

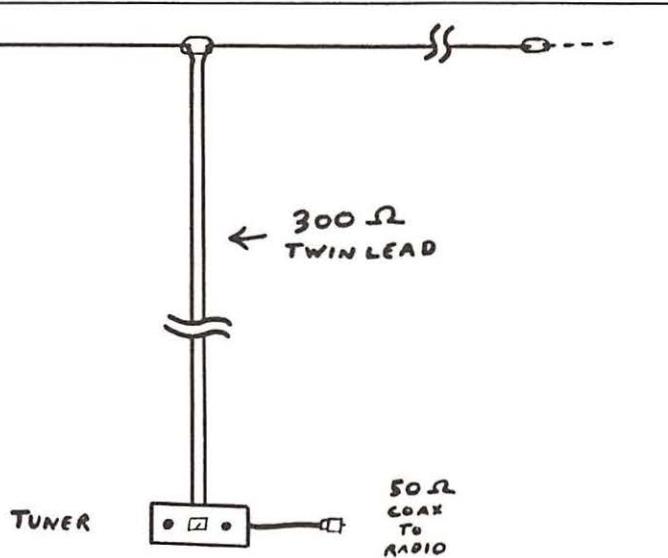
As you can see from the diagram, a dipole antenna has a center. You will want to locate the center of the antenna in the highest possible place you can safely reach. For example, you might go with the peak of your roof. From this center point, the two elements of your antenna will extend outward and downward from each other to two tie-off points on other structures or poles.

YOU WILL WANT TO BE ABSOLUTELY SURE THAT YOUR ANTENNA'S PATH DOES NOT CROSS OVER OR UNDER ANY POWERLINES. You can use common antenna insulators (Radio Shack 278-1333) for your center point and the two antenna ends.

The element length of the two sides of your dipoles are only critical in two respects. You want them to be exactly equal in length and you want them to be as long as possible. Ideally you want your dipole to be as long as the lowest frequency you will want to tune. That would mean that a dipole optimized for the 90 meter band would consist of two elements, each 73 feet long.

Not everyone has enough real estate to pull this off. Most folks will have to settle with something a little less, but fear not, you're still going to hear plenty and, if you have a mind to, you can get a good signal out on the air too. You can use just about any wire you have around that is 14 gauge or thicker to get the job done. If you live anywhere near a farm supply store, you might check out copper "electric fence" wire. Constructed of copper clad over steel wire, this stuff is very sturdy and can be bought in various size rolls to fit your needs.

With the elements all thought out, we can concentrate on the feed line. If your goal is listening and not transmitting, you can use any



good quality 50 ohm coaxial cable to get your antenna down to your radio (or your radio's tuning unit, but that comes later).

Hams who want to use the Do-All Dipole will want to look into using a transmission line made out of 300 Ohm TV "twinlead" cable (Radio Shack 15-1174 or 15-1175). We go with twinlead over coax for practical reasons beyond its comparatively low cost. Twinlead has substantially less line loss when compared to coax. This, coupled with twinlead's ability to operate efficiently with very high s.w.r. mismatches, make this the best transmission line for a wideband dipole like the one we are constructing.

These notions will probably send a lot of antenna experts to their typewriters to ask Larry Miller for my head on a spit! I would suggest they first give twinlead a try. Okay, hams, you probably won't want to send a kilowatt down the line at a s.w.r. mismatch of 20:1. But if you are a normal operator using in the neighborhood of 250 watts, you will find twinlead won't even get warm on you with mismatches as high as 40:1.

Regardless of if you use twinlead coax, feedline length is not particularly critical in this application.

Bring the feedline and the elements together at the center conductor. Wrap one end of each side of the feedline solidly with either element end, using the center conductor as both the separator and support. After you have assured the solid mechanical connection of both pairs of wires, solder each pair with a heavy-duty soldering iron or gun.

Securing the end insulators of your dipole to their respective locations is best accomplished with medium gauge nylon rope. This is strong enough to hold things without looking too bulky and out of place. Also, it does not rot and it has some natural spring and give that will allow your antenna to flex in the wind and under ice.

Now what?

Okay, we have constructed the ultimate antenna! So how do we hook it up to our rigs? Well, at this point we must diverge slightly depending on your intended use.

If you do not intend to use your antenna for transmitting, you have several options. If your receiver has binding posts for antenna and ground and also has some form of antenna tuning (sometimes called an antenna trimmer) you can simply hook up the center conductor and braid of your coax, or each lead of the twinlead and you are on your way.

However, most folks will find it advantageous to make use of an antenna tuner such as the Grove MiniTuner or the MFJ-16010, both available through the many advertisers in this magazine. If you are using twinlead, you can also experiment with hooking the two ends of the twinlead together to form a "T" shaped antenna.

Hams will have to dig slightly deeper into their pockets than their shortwave listening counterparts. The amateur will require a transmatch unit such as the MFJ-945C or MFJ-901B to get the signal straight. Whatever transmatch you purchase, you will want to make sure it is designed to make use of "balanced" transmission lines. Needless to say, a ham will need an s.w.r. meter to see just what kind of trouble he or she might be getting their transmitter into.

If you enjoy building things, you might look at the transmatch units described in any edition of *The ARRL Handbook* published annually by The American Radio Relay League, 225 Main St., Newington, CT 06111.

In addition to the safety warning given previously about powerlines, there are a few other points to ponder if you plan to get through the radio hobby with life and limb intact.

First, route all your wires carefully. We don't need anyone tripping over your feedline, nor do we want your "significant other" cutting through your element support lines with the hedge clippers. You can direct the path of your antenna feedline down from your rooftop with

Sophisticated Monitoring

UNIVERSAL M-7000



If you are monitoring only *voice* shortwave stations, you are missing half the action! Thousands of shortwave stations transmit in non-voice modes such as Morse code, various forms of radioteletype and FAX. The Universal M-7000 will permit you to easily intercept and decode these transmissions. This is the most sophisticated surveillance decoder available. No computer is required. See the world of shortwave excitement you have been missing. From \$999.00.

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The new Universal 88 page communications catalog covers everything that is new for the amateur, shortwave listener and scanner enthusiast. Equipment, antennas, books and accessories are all shown with prices. Available for \$1 postpaid.

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antenna standoffs that can be purchased at any TV-Radio supply store. (You don't want me to plug Radio Shack all the time, right?)

Another consideration is static discharge protection. Often wrongly referred to as "lightning protection," these devices are inserted in the feed line to protect your equipment from MILD static impulses that result from nearby lightning storms.

Let me make something very, very clear. Nothing short of Superman's underwear can withstand a direct bolt of lightning! So do yourself a favor and disconnect your antenna from your equipment during atmospheric storms. We don't want to lose any subscribers.

If you are using a coax feedline, you can make use of one of the products by Antenna Supermarket, Alpha Delta, or Cushcraft. Twinlead users can utilize a simple antenna discharge unit available wherever TV antennas are sold (Radio Shack 15-910).

For many of you, this first antenna project will generate more questions than it answers. That's okay, you will begin to learn the fun of antenna construction projects. Overall, antennas can be both low cost and create real improvement in both listening and transmitting activities.

An excellent first book of radio antennas is Edward M. Noll's *Easy-Up Antennas For Radio Listeners and Hams*, which is available from DX Radio Supply for \$16.95 plus 1.55 book rate or 2.80 UPS shipping. Their address is P.O. Box 360, Wagontown, PA 19376.

As you continue to investigate the subject, you will find all manner of antennas that you will want to try. But for starters, the Do-All Dipole will give you plenty to listen to until that next antenna project comes along.

When requesting help from MT columnists, be sure to enclose an SASE (self-addressed, stamped envelope) for their reply.



Flying through Texas

"I have listened in on some very exciting communications in the last year," says Randy Rogers in Austin, Texas. For example, he has heard a:

- Military jet aircraft with engine overheat, result: safe landing
- Military jet aircraft with engine overheat, result: crash landing
- Military aircraft with landing gear stuck, result: crash landing
- Military aircraft with partial hydraulic failure, result: safe landing.

Where is all this action going on? Bergstrom AFB, Texas, and Randy has sent in a list to help others monitor his area of the Lone Star State. Bergstrom is a Tac Air Force Base.

Bergstrom is the home of the Headquarters, 12th Air Force, Tactical Air Command. This headquarters controls Air Force tactical fighter units throughout the United States. This base is also the headquarters for the 10th Air Force, the Air Force Reserve. They have operational control of all tactical fighter units in the Air Force Reserve worldwide.

The base is also the home of the 924th Tactical fighter group and it is a SAC bomber dispersal base in time of nuclear attack.

Randy monitors all his activity with a Bearcat 210XLT, Realistic PRO-2020 and 2004 scanners. On shortwave, Randy uses a National 98 shortwave receiver and for the ham bands a Swan 240 transceiver. The roof has not been neglected in Randy's shack. He has an ICOM Discone, 50 foot dipole (for shortwave), an 30 foot inverted V antenna.

To keep track of all the approximately 500 frequencies Randy has collected, he wrote an IBM PC program in Turbo Pascal language (a feat I couldn't do, for sure). Anyway Table 1 shows a few of the Lone Star 500 that Randy has monitored.

The channels are "local channels" used in the RF-4 aircraft based out of Bergstrom. The channel numbers indicate preset channels set into each aircraft's radio.

Randy also passes on in Table 2 the miscellaneous military air frequencies he has monitored that cover central Texas.

He has monitored the following Houston ARTCC frequencies:

343.9 307.3 290.5 343.7 279.6 291.7
335.6 353.8 269.0 327.0 299.2

Table 1
Bergstrom Air Force Base, Texas

Channel	Frequency (MHz)	Function
1	258.4	Bergstrom "Outlaw Operations"
2	372.8	Bergstrom Ground Control
3	255.6	Bergstrom Tower
4	362.3	Austin Approach Control (SW Arrival/Departure)
5	306.2	Austin Approach Control (East Arrival/Departure)
6	363.8	Austin Approach Control (North)
7	236.1	RAPCON/GCA (Radar Approach Control/Ground Controlled Approach)
8	341.9	RAPCON/GCA
9	344.8	RAPCON/GCA
10	321.8	Dixie Military Operating Area (MOA) Primary Channel
11	391.9	Bergstrom Final Approach
12	398.2	RAPCON/GCA
13	314.2	924th Tactical Fighter Command Post, BSM Safety of Flight Officer
14	235.8	Bergstrom Clearance Delivery (prev 268.0)
15 to 20	-----	"Have Quick" (Scrambled) channels

Several refueling frequencies have been heard in the Austin area including: 264.9, 361.7, 326.6 and 291.9. Probably the best listening of all are the dogfight, or Tactical Maneuver Training, channels. Randy reports the following channels can be heard from his Austin listening post: 339.5 and 359.6.

So if you are in central Texas and want to monitor some great action, dial in some of Randy's Lone Star 500 and catch the excitement.

Military COMSATS Monitored

One of the more exotic forms of communications that can be monitored in the Federal Spectrum are the military satellites. These things are neat and can provide some very interesting listening. Case in point, a friend of mine knew about the Grenada invasion several days before it happened.

He was monitoring one of the geostationary military comsats and heard some operators trying to establish communications through the bird to Washington, DC.

The operator on the Pentagon end of things either wasn't briefed on what was happening or just was plain dumb. He kept asking the unit off the coast of Grenada who he was and what authority he had to be on the channel. The unit off Grenada tried to be cool and discreetly explain what was happening and who he was.

I guess enough was enough and he finally blurted out that he was off the coast of Grenada and was part of the Grenada invasion force. The rest is history.

Table 2
Central Texas Military Air

375.2	Bergstrom Metro (Weather briefing channel)
372.0	Brady MOA discrete frequency
259.25	Brady scheduling (45 TFS operations)
295.7	Crystal MOA discrete (primary)
307.2	Crystal MOA discrete (secondary)
301.0	Yankee MOA (R-6312) Primary Ops
260.4	Yankee MOS (R-6312) Secondary Ops
357.9	Ft. Hood Flight Following (primary)
231.6	Ft. Hood Flight Following (secondary)
293.9	Ft. Hood Range (Secondary)
317.7	Ft. Worth Center (Eagle: Brownwood)
269.4	Ft. Worth Center (Raven: Brownwood)
360.8	Ft. Worth Center (Texon: Big Lake)
323.1	Houston Center (High Alt: Crystal-Laredo)
322.5	Houston Center (Low Alt: Crystal-Laredo)
355.1	Austin Tower
348.6	Austin Ground Control
361.4	Bergstrom Flight Test
241.8	National Guard Operations (alternate to 36.80 FM)
304.8	TAC Operations
358.2	91 TRS Operations
321.6	Gray Approach Control
252.9	San Antonio Approach Control
381.3	Raymond 28-67th TRW Command Post
314.7	Brownwood MOA Operations
255.4	Low Level AFSS (Austin Radio)
372.2	Bergstrom Pilot Dispatch
321.2	Test Operations (Controller into MOAs, Oil Burner routes)
270.1	Bergstrom Air Terminal Information Service (ATIS)

One of our readers, Ed Flynn of San Rafael, California, has been listening to the milcomsats on his ICOM R-7000 and AH-7000 antenna. The following are some of the results of his monitoring. (Mode: Narrow band FM)

Table 3
Miami Federal Freqs

(+ denotes confirmed usage/agency)

Freq	Desig	Usage, Agency
162.6875	Yankee	+Secret Service, AF-1 PPL Downlink
162.710		Government agency unknown
162.825		US Border Patrol/immigration
163.200	Ch 1/2	+US Marshals
163.3625		Secret Service
163.400		Secret Service
163.625	F3	+US Border Patrol/- Immigration
163.650		+US Border Patrol/- Immigration (Krome Ave)
163.8125		+US Marshals
164.200		+FBI
164.600	Ch 3	+US Marshals, Operations
164.650	Tango	+Secret Service
164.775		DEA or Customs (High Seas Pursuits)
165.2125	Mike	+Secret Service
165.2375		+DEA (are you sure, James-Rod?)
165.2875		+ATF (Charlie Base)
165.375	Charlie	+Secret Service
165.5875		US Customs Service
165.675		Secret Service
165.6875		Secret Service (Probably FAA-Rod)
165.785		+Secret Service
165.9125		Secret Service or Dade Detectives?
165.950		Internal Revenue Service
166.000		+DEA-Fl. Lauderdale Base
166.200		DEA or Secret Service
166.4375		US Customs (Alpha channel?)
166.4675		+Secret Service (Plane in area)
166.535		+ATF (Charlie Base)
166.5875		US Customs
166.925	Delta	Secret Service
167.025	November	Secret Service
167.100		Internal Revenue Service
170.875	Ch 1	+Bureau of Prisons, (S. Dade Prison)
235.100	Preset 7	+USAF Aerial Refueling channel
241.000		+Military aircraft (Probably National Guard channel)
252.800		Military aircraft (USAF TAC A/A-Rod)
257.600		Military aircraft (JAX FACSFAC)
271.200		Avon Park MOA "Shark" flights
275.800	Preset 1	USAF-Homestead ground control
295.700	Preset 2	USAF-Homestead tower
296.700		USAF_Homestead (mentioned on 124.7)
318.100	Preset 6	USAF-Various air defense
324.600		Refueling (Tiger and Nantucket)
349.000	Preset 13	Miami ARTCC
363.800	Preset 15	USAF-Homestead GCA
364.200	Preset 10	NORAD Primary
381.700		USCG Air-to-air
381.800		USCG Aircraft
407.850	Echo	+Secret Service AF-1 PPL (uplink)
414.750		+Post Office-Miami
415.700	Foxtrot	+Secret Service AF-1 PPL (downlink)
417.200		+DEA
418.625	ch 1	+DEA
418.675	ch 4	+DEA
418.750	ch 3	+DEA
418.900	ch 2	+DEA
418.975	ch 7/8	+DEA



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aircraft)
261.931 Top Rock (Alaska) working
Harmony (Told him to go green or
scramble his communications.)
261.954 Atlantis (Guam?) working Trout
50 aircraft

Thanks for the intercepts, Ed, and hope
you check in often with your "out-of-this
world" monitor efforts.

UHF Handheld???

Dennis McFall says he "doesn't
understand it. It's almost springtime, the
time when *MT* will publish frequencies for
the Blue Angels, the Thunderbirds and the
Snowbirds. The problem is that most of
the frequencies are in the 225-400 MHz
range and my handheld scanner does not
cover that range. I have not found any
handheld units that do. Can you help?"

Dennis, it is *Monitoring Times* and
reader Don Sewell to the rescue. Don
sent in a flyer on ICOM Radio's new IC-R1
wideband handheld receiver. The IC-R1
continuously covers 100 kHz-1300 MHz
with AM, FM and FM-wide modes. This
little handheld will allow keyboard entry
into the 100 channels of memory and even
has a built-in 24 hour clock with timer.
The spec sheet says that the "IC-R1 allows
you to listen to what you want when you
want."

So the answer to your dilemma, Dennis,
is the IC-R1 handheld.

Don also includes a question with the
IC-R1 spec sheet. It goes something like
this:

Will this handheld (IC-R1) pick up the
voice communications in the 225-400 MHz
band? If not, is there a desk-top scanner
on the market today which can pick up
these frequencies?

The answer, Don, to both your
questions is a resounding yes. The IC-R1
will monitor the voice 225-400 MHz AM
military aircraft and FM milsatcom
communications. Given the size and
frequency coverage of this rig, a preamp
and outside antenna will probably be
required to hear military satcom transmis-
sions but the rubber duckie antenna should
work well for military aircraft comms.

The most popular desk-top scanner
covering this range is the Realistic PRO-
2005, 400 channel scanner. I own one and
it performs well in the 225-400 MHz range
and has recently been on sale, down below
its \$420 list price.

South Florida FED List or Let's Visit Miami Vice . . .

James Gilbert down Miami way has sent
in a list of federal freqs he has monitored.
He says that south Florida offers the fed
monitor some very interesting frequencies.
Check it out for yourself with some of the
entries in Table 3.

Thanks a bunch for the list, James. I
did a little updating for you. Keep
listening, check in often.

Well, that's it for this month. Until we
meet again, it's time for a cubo with a little
Coca Cola... Later.

Listening for business or pleasure

Plying the Cruise Routes

First, for those of you interested in the cruise ship front, as you read this, Carnival Cruise lines new 70,000 ton *Fantasy* will have made her maiden voyage. She is on the Miami to Bahamas run making three- and four-day cruises. The delay in putting the *Fantasy* into the water was reportedly caused by financial problems at the Finnish shipyard where the vessel was built.

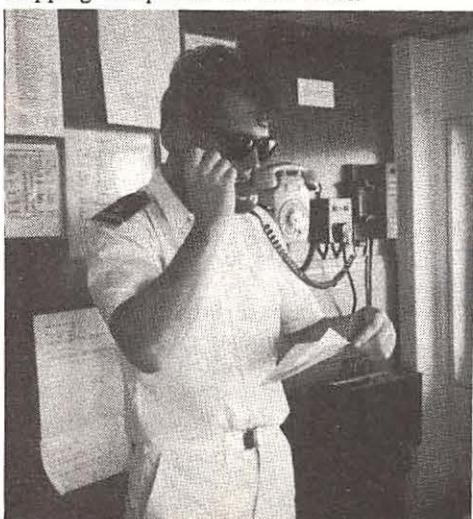
This, in turn, also postponed the delivery of carnival's second new ship, the *Ecstasy*. This vessel is now expected to be completed in the spring of 1991. Negotiations are currently underway for the construction of the *Sensation*, which is the third vessel of this group.

Still on the cruise line front, Princess Cruises has announced that its second new vessel will be named *Regal Princess*, and delivery is expected in the spring of 1991.

Plying the Great Lakes

As you receive this month's issue of *Monitoring Times*, the Great Lakes shipping season is getting into high gear and I thought a look at some of the ships which ply the lakes might be in order.

The backbone of the Great Lakes fleet is the bulk freighter. Traditionally the cargoes have been grain moving east from the head of the lakes and iron ore moving west to the steel mills. Coal to fire those mills is another major cargo. The "lakers" were designed to take maximum advantage of the size of the locks and the newer ones carry up to 50,000 tons. The following is a listing of bulk freighters belonging to some of the major shipping companies on the lakes.



Photo/Harry Baughn

Call sign	Name	Company
VDRC	Agawa Canyon	Algoma Steamships
VCPK	Algobay	Algoma Steamships
VYSZ	Algocape	Algoma Steamships
VGKM	Algogen	Algoma Steamships
VDJB	Algogulf	Algoma Steamships
VCPX	Algolake	Algoma Steamships
VGJV	Algamarine	Algoma Steamships
VOXZ	Algonorth	Algoma Steamships
VCDT	Algoport	Algoma Steamships
VYNG	Algoral	Algoma Steamships
VGJD	Algoso	Algoma Steamships
VGRT	Algounds	Algoma Steamships
VDFP	Algoway	Algoma Steamships
VCBZ	Algowest	Algoma Steamships
VCDT	Algowood	Algoma Steamships
CYJW	Baie St. Paul	Canada Steamship Lines
WA 2806	Benjamin F. Fairless	United States Steel
CYKP	Black Bay	Canada Steamship Lines
VDDF	Canadian Hunter	ULS Corporation
VCTK	Canadian Leader	ULS Corporation
CYMD	Canadian Mariner	ULS Corporation
VGMV	Canadian Navigator	ULS Corporation
VGNW	Canadian Prospector	ULS Corporation
VCKD	Canadian Ranger	ULS Corporation
VOTM	Canadoc	N.M. Paterson & Sons
VCKN	Capt. Henry Jackman	Algoma Steamships
VCLN	Cartierdoc	N.M. Paterson & Sons
VOWN	Catherine Desgagnes	Desgagnes Group
VCPG	Cecelia Desgagnes	Desgagnes Group
VCGQ	Comeaudoc	N.M. Paterson & Sons
VDPO	Eva Desgagnes	Desgagnes Group
VCPC	Ferbec	Canada Steamship Lines
VOJV	J.A.Z. Desgagnes	Desgagnes Group
VONG	Jacques Desgagnes	Desgagnes Group
VDSK	John E.F. Misener	Misener Transportation
VYZI	Le Saule No. 1	Soconav Ltd.
VGGF	Mantadoc	N.M. Paterson & Sons
VYJN	Mathilda Desgagnes	Desgagnes Group
CYGR	Montrealais	ULS Corporation
VCFW	Murray Bay	Canada Steamship Lines
VDZQ	Nipigon Bay	Canada Steamship Lines
WGQC	Ontadoc	N.M. Paterson & Sons
VOGX	Paterson	N.M. Paterson & Sons
VCSP	Prairie Harvest	Canada Steamship Lines
VCWC	Quebecois	ULS Corporation
VGKB	Quedoc	N.M. Paterson & Sons
VGJC	Richelieu	Canada Steamship Lines
VOPK	Rimouski	Canada Steamship Lines
VDDI	Seaway Queen	ULS Corporation
VDDP	Simcoe	Canada Steamship Lines
VGQP	Stella Desgagnes	Desgagnes Group
VCTR	T.R. McLagan	P & H Shipping
VCQJ	Vandoc	N.M. Paterson & Sons
CYJJ	Whitefish Bay	Canada Steamship Lines
VCLP	Windoc	N.M. Paterson & Sons
	Winnipeg	Canada Steamship Lines

A few general cargo ships which are seen and heard on the lakes are:

D5GK	Federal Saguenay	Fednav Limited
D5GJ	Federal St. Laurent	Fednav Limited
VCLV	Fort Chambly	Canada Steamship Lines
CYMS	Fort St. Louis	Canada Steamship Lines
VOPG	Soodoc	N.M. Paterson & Sons

Oil and other liquid cargoes are an important part of the great lakes trade. Among the ships which can be heard are the following, many of which are also ocean-going vessels.

VGEP	Imperial Acadia	Esso Canada
VYQJ	Imperial Bedford	Esso Canada
VXKM	Imperial Dartmouth	Esso Canada
CYBS	Imperial Lachine	Esso Canada
VGYS	Imperial Quebec	Esso Canada
VCVS	Imperial Sarnia	Esso Canada
VCDD	Imperial Skeena	Esso Canada
VCFQ	Imperial St. Clair	Esso Canada
ELEG4	Stolt Aquamarine	Stolt Nielson Inc.
SMMH	Stolt Avance	Stolt Nielson Inc.
D5GR	Stolt Avenir	Stolt Nielson Inc.
ELHO	Stolt Boel	Stolt Nielson Inc.
SMTU	Stolt Castle	Stolt Nielson Inc.
DSVF	Stolt Condor	Stolt Nielson Inc.
SMEJ	Stolt Crown	Stolt Nielson Inc.
D5VG	Stolt Eagle	Stolt Nielson Inc.
ELEG3	Stolt Emerald	Stolt Nielson Inc.
FNPL	Stolt Energie	Stolt Nielson Inc.
FNPI	Stolt Entente	Stolt Nielson Inc.
D5UG	Stolt Excellence	Stolt Nielson Inc.
DSUW	Stolt Falcon	Stolt Nielson Inc.
DSUX	Stolt Hawk	Stolt Nielson Inc.
D5VE	Stolt Heron	Stolt Nielson Inc.
ELVP	Stolt Integrity	Stolt Nielson Inc.
ELEG5	Stolt Jade	Stolt Nielson Inc.
GOZD	Stolt Llandaff	Stolt Nielson Inc.
D5KX	Stolt Loyalty	Stolt Nielson Inc.
SLPY	Stolt Norness	Stolt Nielson Inc.
D5UV	Stolt Osprey	Stolt Nielson Inc.
A8ZV	Stolt Pride	Stolt Nielson Inc.
ELEG2	Stolt Sapphire	Stolt Nielson Inc.
ELTZ	Stolt Sea	Stolt Nielson Inc.
6ZBJ	Stolt Sheaf	Stolt Nielson Inc.
6ZDV	Stolt Sincerity	Stolt Nielson Inc.
6ZXI	Stolt Span	Stolt Nielson Inc.
5LJX	Stolt Spirit	Stolt Nielson Inc.
6ZDP	Stolt Spur	Stolt Nielson Inc.
A8AQ	Stolt Surf	Stolt Nielson Inc.
5MQK	Stolt Syndess	Stolt Nielson Inc.
DSCP	Stolt Tenacity	Stolt Nielson Inc.
ELEG6	Stolt Topaz	Stolt Nielson Inc.

For those living around the Great Lakes, there is a great deal of variety to listen to. Apart from the lakers, there are ocean going ships coming from many different countries.

Apart from the various ship traffic control frequencies, these ships will be heard on the public correspondence frequencies, although frequently the ocean-going ships are using satellite communications more and more. Frequencies such as 161.800 or 162.000 MHz are the most frequently used public correspondence frequencies while 156.550, 156.600, 156.650 and 156.700 MHz are common ship traffic control frequencies. 156.300 and 156.400 MHz are also frequently used for communications between ships and can provide a considerable amount of interesting listening.

Good listening until next time.

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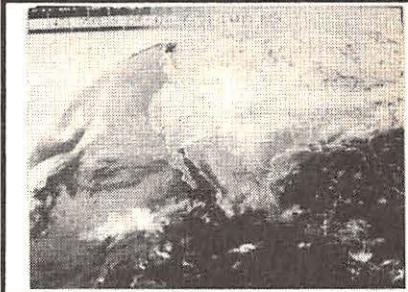
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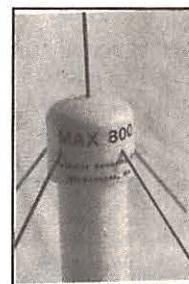
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Learn the Code

As you know, I strongly believe that a no-code amateur license is required to assure the continuation of amateur radio! In fact I would like to see a license that is even easier to obtain and offers more privileges than the license that is presently being considered by the FCC and the amateur community.

However, Morse code is easy to learn -- and a heck of a lot of fun to use! I am certain that anyone who takes a little time to learn Morse properly will enjoy using it. Now please notice I said, "learn Morse properly"!

Two popular methods

There are dozens of code teaching programs for sale; but only two basic types. They are the code tape scheme and computer generated instructional programs.

Computer code teaching programs usually allow you to go to some particular section at the press of a key, making it easy to review material you are not sure of. Of the several good computer programs there is one that I am particularly found of.

MorseMan Plus

The premier Morse Trainer for IBM-PC's

Is a fantastic piece of work that has been created by "Renaissance Development Corporation," P.O. Box 640, Killen, Alabama 35645. MorseMan guides you over all the rough spots from the basics to speed building in several unique ways.

The beginner goes to the section called "Tutor Mode," where you will be given small bites to learn at a given session. The program introduces you to each character and allows you to go back over any part as often as needed to ensure confidence.

The next step is called the "Practice Mode" wherein you will receive random groups of code at your chosen speed. It is possible to watch the code being printed to the screen, or to turn the screen off, and then check your copy against the screen later.

At this point let me say that perhaps the best feature of this program is the concise, clearly written instruction manual that comes with it. The manual will instruct you as to the best way to set the speed settings to learn and explains each step of the program in simple easy-to-understand language.

A keyboard mode allows the user to practice the characters he feels weak on by simply typing them in on the computer keyboard.

The QSO monitor is truly a great idea. In this mode, contacts such as you would copy off the air are generated. Each QSO starts out

with a CQ and follows proper procedure. The user has the option of choosing frequency offset, which makes the QSO sound like the genuine thing. Stations operate at random speed; that is one station may be sending at 7 words per minute (WPM) with a tone of 1000 Hz and the station he is in contact with may be sending at 10 WPM with a tone of 800 Hz (or so). Both speed and frequency ranges are user selectable.

In the QSO monitor mode you will never see the same QSO twice; each is different! To be sure, if you followed the format to a T, you would be a very boring person to talk to on the air, but it does give you the idea, and the program uses correct procedures.

One last feature I want to tell you about is the FCC Test mode. Here you will receive an actual exam, then be asked ten questions of the same type an examination team gives. The program then grades the exam and records your progress. There are over twenty trillion different tests that can be generated by the program; hence there is no chance that you will ever receive the same test twice.

Several students who have used this program have shown remarkable improvement. One fellow went from 0 to over 5 wpm in only one week!

MorseMan Plus is the slickest program to come along in a long time and I highly recommend it to those who want to learn Morse properly. Let me remind you, though, that no program will help if you do not apply yourself!

MorseMan Plus is available only for the IBM PC/clones and costs \$24.95 plus \$2.00 shipping direct from Renaissance Development.

Special Event Station AE9K

The W/K Amateur Radio Club will operate special event station AE9K from 1400Z May 5th to 0500 UTC May 6th to commemorate National Astronomy Day. AE9K is located at the Nichols Astronomical Observatory. Suggested frequencies are 14.250, 21.350, and 28.450 MHz. Operation through RS10 is also planned in the CW mode.

Reception reports from shortwave listeners are welcome and qualify for the special QSL card. Address cards and reports to: Nichols Observatory, 3885 Pioneer Rd, Richfield, Wisconsin 53076.

MIR is Back

U6MIR/U7MIR have resumed operations on 145.50/145.550. Listen for them after 1800 UTC during the week, and at any time during weekends.

The new radio that was taken to MIR broke down and the cosmonauts are using the

original U2MIR gear that had been left aboard the space craft. A new rig is being shipped to them on a resupply mission in the near future.

QSLs can be sent to the bureau, or to UW3AX at: P.O. Box 679, Moscow 107207, USSR. Cards sent direct require an IRC and self addressed envelope for a reply!

WO-18

WEBERSTAT - OSCAR 18 is an OSCAR carrying an imaging device to take photos of the earth from orbit and return them via amateur radio. WO-18 has been in orbit since early March of 1990 and has returned many good photos. The device was designed and built by Weber State University.

At present only a few designated testers have the required software to receive the images from the WO-18. A software design team is presently evaluating and debugging the software required to receive the images.

If all goes well the software (Weberware 1.0) will soon be available to all from the AMSAT Software Exchange. The software will run only on an IBM PC or clone with EGA or VGA graphics. The photos generated are in color.

Geosynchronous OSCAR

Imagine intercontinental communications with an HT 24 hours a day every day of the week! A fantastic idea, and it is possible.

For several years, AMSAT has been studying the possibility of orbiting an OSCAR at an altitude of about 22,000 miles. At this altitude the satellite would appear to remain stationary. All one would need do is aim an antenna at a spot in the sky and operate. No more computer programs to track the bird as it flies by every few hours.

It would be possible to link repeaters on earth to provide voice and digital communications 24 hours a day with a large portion of the earth. Gear requirements would be very simple and affordable for the majority of the amateur population.

AMSAT has been studying the project; to date they have operated on a shoestring and have proven the feasibility of space communications for amateurs. If they are going to get a geosynchronous OSCAR up there, it is going to take a lot of money [read that millions of dollars]. It is one heck of a great project which will truly bring amateur radio into the twenty first century with a bang.

Seems to me this is the kind of thing every amateur should get behind and push for. Join AMSAT, be active and promote the idea!

Kudos to W5UN

Early March saw the DOVE OSCAR's (DO-17) computer crash. The system was locked up and impossible to re-boot. The problem was caused by a transmitter that was turned on, and would not shut off which in

turned de-sensitized the 2 meter command receiver aboard the space craft. Hence the AMSAT command team could not give commands to the computer.

Repeated attempts were unsuccessful until Saturday March 17th when W5UN aimed his large EME (Earth Moon Earth) array at the errant satellite. W5UN owns the largest (privately owned) two meter antenna in the world. Even with two million watts of Effective Radiated Power (ERP) it took several days and many attempts to correct the problem. DOVE is now operating normally thanks to W5UN!

AMSAT Nets

Table I provides a list of nets that provide timely information on space communications.

Join in, learn what's going on in the field of space communications!

Propagation

Sunspot numbers have improved with numbers over 200 on many days. Conditions have been too erratic to make any kind of definitive call, but in any case we can expect good to excellent conditions for the next few months!

DX (via Northern Illinois DX Assn)

Walvis Bay QSO's after September 1, 1977 will receive DXCC credit. Do not submit cards

before June 1, 1990.

Conway and Banaba QSL's are now being accepted. Since no activity is believed to have taken place from Conway before the 3D2CR operation of April 1989, contacts with the reef are creditable effective with the start of that operation. However, there were a few operations with the prefix VR1 from Banaba, formerly known as Ocean Island, before the T33JS/T33RA activity of May 1989, and those VR1 QSL's are creditable.

A few DXCC members have been given credit for Western Kiribati, formerly known as Gilbert Islands, including Tarawa, based on an Ocean Island QSO with a VR1 station before 1979. Those members may resubmit those cards for the proper Banaba credit, along with a Gilbert Island or Western Kiribati card for

Western Kiribati credit, as of March 1, 1990.

Namibia became independent on March 20, and has changed prefix. ZS3 is now V51, and ZR3 is now V50.

Packet Coming of Age?

On a recent notice on a packet BBS, I saw a message about Orienteering. Checking the message out proved very interesting. The message explained what Orienteering is, how events were conducted and a schedule of Orienteering events in the area for the entire summer. It also extended an invitation to everyone to join the Delaware Valley Orienteering Association.

What a pleasure to see the general public being included in our amateur radio activities.

With luck there will be more such messages aimed at John Q. Public, this in turn can only help make our non-ham friends aware that we are humans and do want to participate in general society. (nice going W0HLC!).

That's all for May, folks. See you in Knoxville! 73 - Ike, N3IK

Table I - AMSAT NETS				
DAY	TIME (UTC)	FREQUENCY	NCS	COMMENT
Sunday	0900	14.280MHz.	ZS6AKV	AMSAT South Africa
Sunday	1000	3.685	VK6AGR	Australia
Sunday	1900	14.282		International
Sunday	1900	21.280	W8GQW	Simulcast on AO-13
Sunday	2300	18.155	N4QQ	DX net
Tuesday	1400	3.840	W8GQW	East Coast
Tuesday	1500	3.840	W0CY	Mid America
Tuesday	1600	3.840	KI6QE	West Coast
Saturday	1500	28.460	WB2YGA	Beginners net
Saturday	1000	14.280	PA0DLO	European net
Saturday	2200	14.282	ZL1WN	South Pacific net



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The **Equipment Buyer's Guide** gives you the edge in selecting just the right equipment for the shack, whether it be HF or VHF/UHF rigs or accessories. All the information is here in one handy, concise directory with descriptions, technical specifications, model numbers, retail prices and photographs. What do you do to get a license? How do you put a packet station on the air? What transceiver features are important to DXers? What equipment will you need for the new code-free license? These questions and more are answered in feature articles. Buy with confidence when you make your decisions based on all the facts.

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Card No. _____	Signature _____			
(Signature required on all charge orders)				
Mail to: CQ Communications, Inc.				
76 North Broadway, Hicksville, NY 11801				

BRAZIL

Radio Cultura, 17815 kHz. Partial data QSL letter. Verification signer, Maria Luiza A. Kfouri, Chefe de Prod. Programacao. Also received station literature and photo. Received in 46 days for a registered Portuguese report and two IRCs. Station address: CEP 05099, Aqua Branca, Sao Paulo, Brazil. (Robert Landau, Secaucus, NJ)

BURKINA FASO

Radiodiffusion-TV Burkina, 4815 kHz. Full data QSL letter with schedule and map, without verification signer. Received in 208 days for a French report and mint stamps. Station address: B.P. 7029, Ouagadougou, Burkina Faso. (Terry Ryan, Bellerose, NY) (Sam Wright, Biloxi, MS) (Brian Bagwell, St. Louis, MO)

CZECHOSLOVAKIA

Radio Prague, 11990 kHz. Full data scenery card of Opocno Castle, without verification signer. Also received stickers and pennants. Received in 42 days for an English report and one IRC. Station address: 12099 Praha 2, Vinohradska, Czech. (John Carson, Norman, OK) (Frank Hilton, Charleston, SC) (Sam Wright, Biloxi, MS)

GUAM

KTWR, 11805 kHz. Full data station studio card and program schedule. Verification signer, Beth Chick. Received in 27 days for an English report and mint stamps. Station address: P.O. Box CC, Agana, Guam 96910. (Darren White, New Augusta, MS) (Fraser Bonnett, Kettering, OH) (Sam Wright, Biloxi, MS)

LUXEMBOURG

Radio Luxembourg, 6090 kHz. Full data "antenna" card and stickers, without a verification signer. Received in 30 days for an English report and three IRCs. Station address: 38 Hertford St., London W1Y 8BA, United Kingdom. (Darren White, New Augusta, MS) (Fraser Bonnett, Kettering, OH) (Charles Edwards, Scranton, PA)

MOROCCO

Radiodiffusion-TV Morocaine, 17595 kHz. Full data QSL card. Verification signer Tanane M'hammed Jamal Eddine. Received in 53 days for an English report and three IRCs. Station address: 1 Rue el Brihi, Rabat, Morocco. (Darren White, New Augusta, MS) (Frank Hilton, Charleston, SC)

NAMIBIA

Radio Southwest Africa, 4965 kHz. Full data scenery card, without verification signer. Received in 229 days for an English report. Station address: Box 321, Windhoek 9000, South West Africa/Namibia. (Robert Landau, Secaucus, NJ)

NIGERIA

Voice of Nigeria, 7255 kHz. Full data color card of Lagos Airport, without verification signer. Also received program schedule. Received in 86 days for an English report and mint stamps. Station address: P.M.B. 12504, Ikoyi, Lagos, Federal Rep. of Nigeria. (Terry Ryan, Bellerose, NY) (Frank Hilton, Charleston, SC)



John Flake of Charlotte, NC, received this verification card from the USSR's Radio Station Peace and Progress.

NORTHERN MARIANAS ISLANDS

KFBS, 15375 kHz. Partial data QSL card, without verification signer. Received in 80 days for an English report and two mint stamps. Station address: Far East Broadcasting Co., Box 209, Saipan, CM 96950. (Robert Landau, Secaucus, NJ)

SHIP TRAFFIC

Continental Wing-ELJS6, 15665 kHz USB (car carrier). Full data prepared form card. Received for an English utility report and return postage. Ship address: c/o Act Maritime Co., Ltd., Honda Yaesu Building, 505 Yaesu Building, Dhuo-ku, Tokyo 103, Japan. (Hank Holbrook, Dunkirk, MD) Changed to Liberian flag 12/6/89.-ed.

Ocean Explorer-ELHS6, 500 kHz (tanker). Full data QSL letter with two photos of vessel. Received for an English utility report and return postage. Ship address: c/o Johnson Maritime Service (Gulf) Inc., 2210 Market Street-Suite 707, Galveston, Texas 77550. (Hank Holbrook, Dunkirk, MD)

S/S Canberra-GBVC, 12336 kHz USB (British cruise ship). Partial data prepared form card with ship's stamp. Verification signed as initials L.A.R. Received in ten days for an English utility report, souvenir postcard, and one U.S. dollar for return postage. Ship address: c/o Express Travel Services Inc., 350 Fifth Avenue, New York, New York 10118. (Richard Albright, Merced, CA)

M/S St. Michaelis-DNHM, 16587 kHz USB (West German tanker). Full data prepared form card with ship's stamp. Verification signer Klaus Dieter Hemm, Radio Officer. Received in 39 days for a German utility report, souvenir postcard and one U.S. dollar for return postage. Ship address: c/o Columbus Overseas Pty. Ltd., G.P.O. Box 5340, 2001 Sydney, NSW Australia. (Rick Albright, Merced, CA)

USS Briscoe DD-977. NNNOCVN, 14467.0 kHz USB. Full data QSL letter. Verification signer Paul Demaroney. Also included the ship's sticker with crest and postcard. Received in 30 days for an English utility report and US mint stamps. Ship address: FPO New York, NY 09565. (Fraser Bonnett, Kettering, OH)

USS Eisenhower CVN-69. NNNOCVG, 14477.0 kHz USB. Full data QSL card. Verification signer, T.M. Rice. Received in 25 days for an English utility report and US mint stamps. Ship address: FPO New York, New York 09532-2830. (Fraser Bonnett, Kettering, OH)

SWEDEN

Radio Sweden, 11705 kHz. Full data Stockholm scenery card, with illegible verification signer.

Received in 15 days for an English report and one IRC. Station address: S-105 10 Stockholm, Sweden. (John Carson, Norman, OK) (Brian Bagwell, St. Louis, MO)

UNITED ARAB EMIRATES

UAE Radio, 13605 kHz. Full data QSL folder card. Verification signer, Ahmed A. Shouly, Director. Received in 47 days for an English report. Station address: P.O. Box 63, Abo Dhabi, UAE. (Bob Hurley, Baltimore, MD) (Max Gruenberg, Edgewater, NJ) (John Carson, Norman, OK)

UNITED KINGDOM

Speedbird Radio, London Heathrow Airport, 5535 kHz USB. Full data QSL letter and station info sheet. Also received a color postcard of the Concorde. Received in 21 days for an English utility report. Station address: Speedbird London, British Airways, London Heathrow Airport, Hounslow, Middlesex, England. (John Kokinda, Marblehead, OH) Noted frequencies are: 8921, 10072, 13333, 17922, 21946 kHz USB.-ed.

UNITED STATES

WHAS-840 AM. Full data station QSL card. Verification signer, Charles Strickland-Chief Engineer. Received in ten days for an English AM report and a self-addressed envelope. Station address: 520 W. Chestnut, Louisville, Kentucky. (Russ Hill, Oak Park, MI)

WSM-650 AM. Full data station QSL card. Verification signer, Tom Bryant, Production Manager. Received in 21 days for an English AM report and a self-addressed envelope. Station address: 2644 McGavock Pike, Nashville, Tennessee 37124. (Russ Hill, Oak Park, MI)

KYW-1060 AM. Full data station logo card, without verification signer. Received in 26 days for an English AM report, self-addressed envelope and mint stamps. Station address: Independence Mall East, Philadelphia, Pa. 19106. (Harold Frogge, Midland, MI) (Russ Hill, Oak Park, MI)

WHBC-1480 AM. Full data station logo card. Verification signer, Bill Glasser, Chief Engineer. Received in four days for an English AM report, self-addressed envelope and mint stamps. Station address: P.O. Box 9917, Canton, Ohio 44711. (Harold Frogge, Midland, MI)

USSR

Radio Station Peace and Progress, 11980 kHz. Full data color card with station logo and no verification signer. Also received station literature and souvenirs. Received in 76 days for an English report and one IRC. Station address: Moscow, USSR. (Bob Hurley, Baltimore, MD) (John Carson, Norman, OK)

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Copying Cyrillic

The RTTY system in the US and Europe uses a Baudot code that has 32 combinations. They are derived from what is called the five unit code. If you consider a mark and space as a 0 and 1 you will have two combinations for each bit. An "RTTY" character has five bits.

Mathematically it's expressed as 2^5 (two to the fifth power). With only 32 combinations, you probably wonder "how will the Baudot code support the 26 letters of the alphabet plus numbers and punctuation?" The fact is, there are a total of 52 different characters that can be sent during a transmission.

The Baudot system was set up so that six of the 32 combinations are used as control codes. They are: carriage return, line feed, letters, figures, space and null (unperforated tape), and they don't generate a printout on a TTY or computer screen.

When a figure control code is sent, for example, a teletype machine or computer goes into a mode which replaces the letters with numbers or punctuation. On a teletype machine this involves a mechanical movement of the paper roller assembly (in some machines) and causes a loud clanking or sometimes the floor to shake.

A computer simply goes to the proper look-up table and prints the character which follows the figure's command. The figure's code allows the equipment to support 26

additional characters. The baudot code 11000, for example, can be an "A" or a "-" (dash).

Other languages such as Russian, Arabic, Korean, and Chinese have more than 26 characters. For them, another system is needed in order to support the additional set. Russian, for example, uses what is known as the third shift cyrillic. Other countries use variations of this scheme and if you want more information, get a copy of George Klingensfuss' *Radioteletype Code Manual* or the *Confidential Frequency List* from one of the *Monitoring Times* advertisers.

The third shift system means that the teleprinter will shift to a third set of characters (the paper roller moves to a third level) which usually supports the national alphabet. On a radio modem (such as the Universal M-7000) you will have the ability to display the extra cyrillic characters but some amateur radio "all mode" packet units will not. AEA sold a software package for the Commodore 64 in the mid 1980s called "SWL Text" which used the transliteration method.

Transliteration converts special characters that can't be displayed on a computer screen into the English phonic equivalent. The Russian character that looks like a "W" with a tail, for example, is pronounced "shch." Another character looks like a number 4 and has the "ch" sound. The squiggly Arabic or even Oriental characters can be replaced with a phonic equivalent.

Figure 1 is a printout of a Russian cyrillic transmission on 12.504 MHz in normal RTTY mode. As you can see, it's quite garbled and looks cryptic. It also consists primarily of numbers and punctuation. Some RTTY enthusiasts will probably figure it's encrypted data. Figure 2 is much more readable, but sorry, I don't know Russian.

Most Russian cyrillic traffic can be found near 12.5 MHz plus or minus a few kHz just about any time day or night in eastern or central USA. You can also find traffic on the 8, 16, 22 and 25 MHz bands. I didn't print any loggings because these transmissions pop up just about anywhere in that range. Just tune around until you hear an RTTY signal and set your M-6000 or M-7000 to cyrillic mode, 170 Hz shift and 50 baud.

By the way, the intercepts were printed out using experimental software that receives characters from the M-7000. The software has the ability to transliterate and display the characters on an IBM PC or compatible by connecting it to the M-7000's serial communications port.

The transliteration part works well, but I'm in the process of modifying the remaining software by adding the M-7000 control portion. The transliteration part was written by a university professor in the US.

NNN

Figure 1

RUSSIAN CYRILLIC USING NORMAL RTTY

```
(344 / 29("-),/93 & ."3 51
(2 16 $- 34., 2)-8.847
(9,'5-,58,9284 7;$99&83 11 29)91 2-
34- 09"4-2)1 04-",8(9. ;3)-
(430(9&9"9492/1; '34&3 -
$. 5? (4-,6 )74 (44/
```

Figure 2
TRANSLITERATED RUSSIAN

```
TLUCH KR4/MRT NROR KH VU VV'V PERIZH
YERCH' VOROSHILOVA 23 KV 100 OSELEDETS V P=
YETROVICH POZDRAVLAYU PRAZDNIKOM ZHELAYU KREPKOGO
ZDOROV'YA SCHAST'YA SEKH BLAG SOBINOCHKA POZDRAVITEL'
NUYU POLUCHILA SPASIBO MENA VSE OROSHO PISHITE TSELUYU=
LAVA-M TB KRASNYY LUCH KR4/MRKH NR 395 24 22/2 0340=
YERCH' MARATA 11 KV 36 ZAKARPUKE OL'GE IVANOGNE=
OLESHCHKA POLULA PIS'MO VALERA ZH SAL OVOYE RDM
ZHEREDAVALA BRUKIAM PRINESGI PRINESUT OBAZATEL'NO
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TVRO User's Net

"WA4NNJ, this is WOPYI, are you there, Barry?" What seems like the start of another typical amateur radio schedule is, in fact, the first stirrings of the weekly TVRO user's net.

The net first began in the late 1970s as a meeting place for hams whose electronic interests included the emerging technology of satellite television. In those early days of the industry there were but a few satellites which carried a small number of active transponders. Equipment for reception was big, extremely expensive and far beyond the means of most consumers.

In its own way, the birth of the home dish satellite industry mirrored the birth of commercial radio. Urged ahead by the hit and miss progress of experimenters, both radio and TVRO owe a debt to the amateur experimenter.

As in the days of spark gap transmitters and galena receivers, there arose among this far-flung community of TVRO pioneers the need to communicate. Thus, the 20 meter TVRO User's Net was born. Every Sunday afternoon since then, hams from around the country whose other electronic passion is satellite TV have met at 2:00 p.m. ET on 14.309 MHz USB.

The Players

WOPYI is Jim from Missouri. It's his powerful signal which announces the beginning of the "early bird" net (around 1:30 p.m. ET) to establish the frequency. Jim, with his friendly low-key style on the air, is typical of the hams of the net. Having built his own dish in addition to other satellite TV related gear, Jim has watched the industry grow from its infancy.

WA4NNJ, the object of Jim's call, turns out to be Barry who lives near Richmond, Virginia. Barry came to TVRO a little later than Jim but with no less enthusiasm. It is his signal, powered by a Heath HA-14 Amplifier which officially calls the net together at 2 p.m.

That's really the end of officiousness with this net. Barry, who takes on the duties of East Coast Net Control, sets a tone for the net which eschews the hectic business of most nets you may have heard. Stressing the aspects of satellite TV which are fun, interesting and entertaining as well as educational, Barry invites everyone listening to participate.

Indeed, even when hams who blunder into

the net not realizing it is a net ask for signal reports, Barry is patient enough to comply and introduce the newcomer to the rest. In this respect, the Net reflects the better qualities of amateur radio today.

Tom, KX7B, of Idaho is the overall net control and relays west coast stations whose signals, due to propagation, can't make the haul eastward. Tom's busy schedule as a full-time TVRO retailer forces him to miss the net for long periods of time. Last December he spent a month in the Caribbean replacing dishes which had been destroyed in the fury of Hurricane Hugo.

The Net carries on the tradition of experimentation and reflects the better qualities of amateur radio today.

insights into the industry come from years of writing for various publications on the subject. Fluent in Russian, Bob keeps up to date on the fledgling Soviet TVRO hobby.

Of course, there's the irrepressible Bob Heil, K9EID, of Illinois who is no stranger to the amateur radio community. In addition to his business of manufacturing amateur radio microphones, Bob is a major TVRO retailer, maker of the Heil SC-1 SCPS receiver, and still has time for his vintage T-Birds.

There are many many more who check into the net, some more frequently than others, but all with contributions from which we may all benefit. That's the whole point of the net: carrying on the tradition of experimentation, exchanging views on the status of the industry, and trying to find answers to everyone's questions. This is one place where your two cents is really worth something.

What you'll hear

Up for discussion on any given Sunday on the TVRO User's Net will be issues ranging from what new channels are seen and where, how to fix a balky actuator, where to find schematics for equipment from now defunct manufacturers and much more.

Each Sunday listeners will be treated to a few glimpses into the past of the industry: The Halcyon days before scrambling; old rivalries such as Shaun Kenny, Chuck Dawson and

Keith Lamonica (who, as W7DXX, made many nets in the early days). There's talk of the joys of homebrewing TVRO gear; the many check-ins by early pioneer Bob Cooper, VP5D, whose call in those early days before his move to the Turks and Caicos was W5GHT.

There are always plenty of tales of dish installations, bent actuator arms, blown receivers and the like.

How to join

If you want to participate in the TVRO User's Net, all you need is an amateur radio license of General Class or higher. Even without a ham ticket, you can still enjoy monitoring the net but you'll need a receiver with good selectivity and sensitivity. 20 meters on a Sunday afternoon can be pretty crowded. If you're a shortwave listener and have a question or comment to pass to the Net, just send it to me in care of this magazine. I'll even QSL reception reports.

CD audio via satellite

For many months a black and white billboard for ICT CD/18 has appeared on F4,19. Dish owners who tune the FM subcarrier frequencies have enjoyed a number of music formats with an uninterrupted 24 hour per day format. Until now this has been a test transmission for International Cablecasting Technologies, Inc., which is now ready to introduce its service.

ICT through its own audio encryption system will make available 18 stereo channels of compact disc quality music without commercials, announcers or any other interruptions on a 24 hour per day basis.

How it works

ICT's CD 18 service will work much the same as premium video programming. Music in 18 formats will be uplinked from ICT studios, digitally encrypted and received by the consumer's TVRO system. A special tuner called the D-M 100A goes between the satellite receiver and a stereo. Consumers choose the formats to which they may wish to subscribe and the tuner allows access to those channels.

That's not all

ICT has other ideas with this unit as well as music. In addition, it has a data service capability which, when connected to the

consumer's computer, can receive data at 9.6 and 19.2 K Baud.

The system is also capable of displaying program information on any of the music channels either through a stand-alone LCD display or the consumer's TV screen. The display will be four lines of up to 24 characters listing the song title, artist, album and record company information concerning the music as it is being played.

Finally, authorization can be given for the whole music package or on a pay-per-program basis at a rate of about 250,000 subscriptions per second. One imagines they will reserve a channel or two for special music events such as concerts on a pay-per-event basis.

Paying the piper

ICT, who have been uplinking the Tempo Sound Cable Music service for several years, will charge TVRO users \$150 for the tuner and about \$100 per year for service subscriptions. It should be noted that cable listeners will likely pay the same for programming but will not have to buy the tuner.

For more information on ICT, write them at 342 Madison Avenue, Suite 505, New York, NY 10173, or phone 212-983-3300.

TRANSPONDER NOTES

Before the SCI-FI Channel has even had a chance to bomb, a report in Multichannel News warns us to look for the Chiller Channel which hopes to launch on -- you guessed it -- Halloween of this year. While you're at it, look for the debut of the Cowboy Channel at the same time. No word as yet as to their location or availability.

Where's all the programming for these networks coming from? Where else: the forty-year-old television graveyard. Hastily buried network stinkers will rise from the shrouded mists and infest your TV set. It's a horror story too true to be good.

ABC began regular tests of its scrambling system last winter. Thus all major networks have scrambled their C-band time zone feeds. Dish owners who want to watch those networks are forced to subscribe to either the Netlink package (which uplinks the three networks via their Denver affiliates) or Prime Time 24 which uplinks WBBM (CBS) Chicago, WABC (ABC) New York and WXIA (NBC) Atlanta. The Netlink package, however, is not available to TVRO users who are deemed to be within the range of network over-the-air affiliates.

MAILBAG

Loren Cox, Jr., who writes for Glenn Hauser's *Review of International Broadcasting*, notes Nebraska ETV on S2,2 with analog stereo on 6.12 MHz and 6.30 MHz. The channel also has a reading service on 6.8 MHz. He also says he gets Ku on an abandoned USCI dish and feed. (See *MT* Dec. 1988 for a picture of one of these USCI dishes.)

USCI was the original DBS Ku effort of the mid 1980s which went under after about a year of service and many millions of dollars. Subscribers, or victims, if you prefer, paid about \$700 for these dedicated (immobile) Ku dishes with fixed feeds. By the end of the year, as the service collapsed, they all had very attractive boat anchors.

Loren uses a "Drake ESR2240 for Ku Band with 30 dB or 24 dB selectivity at 3 dB down. ..(it) can be set up for all Ku band formats but have found the best results are obtained by tuning it in 5 MHz increments." Having to set the feed for vertical or horizontal polarity

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82 RTTY press services are listed on 547 frequencies not only in the numerical frequency list, but also chronologically for easy access around the clock, and alphabetically in country order.

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by hand, he finds the vertical transponders the more interesting. He has also replaced the original LNB with a California Amplifier 1.1 dB LNB and claims "pristine pix."

The USCI dishes are widely available in the areas of the country in which USCI was test marketed and may be had for little or nothing. One may also find them at hamfests.

Loren also noted the Caribbean Super Station with a test on W5,4 on December 6. He sent a reception report "and received a reply indicating that transmissions were to begin on that transponder on 1 Jan. 1990..." Interestingly, Westsat Communications, which publishes the bimonthly Satellite Channel Chart, has the following listing under W5,4 : "Great American Broadcasting (Begins 1-1-90)."

Stewart Barry of Santa Clara, California, writes: "I'd like to know if you have any information on the 'Heil SCPC Receiver'?" Sure do, Stewart. Everything you want to know and more about the Heil SC-1 SCPC receiver may be had by writing Bob Heil at: Heil Sound, Marissa, IL 62257.

A special thanks to Charles Veith (KG5TV) of Tahlequah, Oklahoma, and Bob Kozlarek (WA2SQQ) of Elmwood Park, New Jersey, whose inquiries prompted the lead for this month's column. Charles is a long time *MT* subscriber "way back to when it was a newspaper format." Charles, that's going back a ways.

Bob is a product specialist in the Audio Video Systems Group-Technical Support Division of Panasonic (which makes the C2000, CRD 4400 and CRD4500 satellite receivers). He writes, "Along with my professional involvement, I have a working system and have installed quite a few of my own."

With people like this joining the TVRO User's Net, it's easy to see how it has lasted so long.



What's Next?

WEXT-FM
96.9 MHz



Program Director and Afternoon Jock
Chris Lammy at Next-FM



General Manager Ron Rizzi



Next-FM Morning Man Bob Carmody

It's elevated, creative, intelligent and informative. It's an alternative to top-40 contemporary-hit radio, beautiful-music radio, hard-rock radio, and almost everything else on the air. It's a thorough education in contemporary music. It's Next-FM: WEXT 96.9 and it's broadcasting from the center of the Hudson Valley in Arlington and Poughkeepsie, New York.

General Manager Ron Rizzi has created a station "where great music knows no boundaries," and whose format defies description. "It's progressive in a sense, but not predictable or obscure. You don't hear the same songs 500 other stations play. It's quality music from quality artists. You'll hear Kenny Loggins, but not the same five or six songs you always hear. Listeners say it's like a breath of fresh air."

Next-FM is expanding the tastes of valley residents with a broad variety of music. Mature rock styles combine with additions from new age, jazz and folk artists. Listening becomes an enjoyable learning experience.

Turn on Next-FM any weekday morning and sample Bob Carmody's show. You'll hear Pat Metheny, Bob James and Bob Dylan. Sadao Watanabe, Bonnie Raitt and Brenda Russell. Julia Fordham, Bruce Hornsby and The Range and Indigo Girls. Mornings also bring a variety of help features on Next FM -- not the usual diet of shock and scandal. Instead, host Bob Carmody presents positive things like "Money Smarts," "Kid's Stuff" with a local pediatrician, "Heart Of the Matter" on health, and a series on "Black History."

Truly a station for the 1990s, Next-FM began broadcasting just over a year ago on December 3, 1989. When the FCC created new rules under Docket 80-90 allowing many new FM stations around the country, Rizzi created a partnership with some friends and applied for the 96.9 allocation for Arlington, New York. Ron's company, Bridge Broadcasting Group, was awarded a license, and Next-FM was born.

"Starting a new station is pretty complicated and expensive stuff. You have to be pretty creative to make something out of just a license for a frequency." With a degree in business administration, Ron pursued a career in radio working at several New York stations until he switched careers five years ago to become a computer consultant and teacher.

Broadcasting never left his mind, however. He saw a tremendous gap in radio programming and was determined to fill it.

"I wanted to create a station for the nineties. Seventy percent of the world is now over thirty years old. They are well-educated, gainfully employed and have children. They used to come home and relax to Led Zeppelin, and that just isn't appropriate and acceptable to their family lifestyle."

Ron sees his audience as being diversified as their ages. "They are all so different. One media just won't reach everyone. They don't all watch 'Roseanne' and they never want to fill out surveys," but Next-FM listeners really respond. A recent direct mail questionnaire must have hit a chord with the Poughkeepsie area since almost half of them were returned immediately. "We pay attention to everybody. Our listener's suggestions and comments are very important."

Most radio stations depend on rating services that measure the cumulative amount of people that tune in during a period of time; for example, 6 to 10 a.m. Contrary to this trend, Next-FM is designed for hours of continuous listening. "It depends on what your perspective is. When you produce least common denominator programming, you believe the average listener listens for ten or fifteen minutes. They don't make you stay. They make you switch. It defeats the whole idea of marketing."

"You have to deliver to your intended market," Rizzi realizes. "Our listeners are people who had given up on radio. They

became bored with the same repetitive music. Next-FM is not loud and obnoxious. It's beautiful, but it's not beautiful music. Our listeners used to listen to compact disks, but now they listen to us."

Listeners of Next-FM are loyal not only for the music. With only eight minutes of commercials an hour, the station has a continuous noncluttered sound. Contest winners at Next-FM have won tickets to tapings of David Sanborn's "Night Music" television program, trips to Europe and Jamaica, and digital audio music systems.

With new music and new ideas, 96.9 FM in New York's Hudson Valley, is becoming a trend setter for what's next for radio in the 1990s.

Bits and Pieces

✓ Things are abuzz on AM radio, and broadcasters aren't pleased. Radio frequency noisemakers are everywhere: televisions, computers, light dimmers, VCRs, even telephone answering machines.

The latest entry to the melee is the RF light bulb. Very similar in design to fluorescent lights, they may soon cover your home with static that few AM signals can penetrate. New England Power Service Company and Potomac Electric Company of Maryland have been installing these lamps, free of charge, as part of their campaigns to save energy for customers.

Over 15 million homes have seen the light, and the FCC has no plans to increase regulation on RF lamps in the near future. AM broadcasters are desperately trying to tighten federal regulations on RF noise to maintain at-home audiences that are essential to their survival. Stay tuned... if you can!

✓ A new radio network will hit American airwaves soon, and it's all kid's stuff. Linda Katz and Marcia Moon have joined with lawyer Ragan Henry to create the first nationwide

network for children, providing 13 hours of programming a day, every day of the week. "Parents are looking for entertainment options for their kids other than television, and one of the greatest strengths of radio is its ability to help develop children's imaginations," Linda Katz said in a recent interview with *The Chicago Tribune*.

The shows, emanating from studios in Philadelphia, will be presented for children ages three to ten. Over 20 radio stations are already negotiating with the network, whose name has not yet been released to the public pending copyright approval.

Mailbag

✓ David Parsons of Tucson, Arizona, sent us news of a dandy book you might want to read. *The Pied Pipers of Rock 'n Roll Radio: Deejays of The 50s and 60s* is an amazing collection of stories and recollections of legends like Alan Freed, Dick Biondi, Hunter Hancock and Wolfman Jack. You'll read all about the birth of rock music, the payola scandals, their wild lifestyles, and the power they achieved with their big 50,000 watt voices. It's just like sending you and your radio back to the future. Written by Wes Smith, it's published by Longstreet Press and is 224 pages of endless fun.

✓ The ship has finally come in at WNOP in Cincinnati. The AM jazz station has finally dropped anchor forever and returned to dry land. Probably the only floating station in the nation, owner Al Vontz II decided to move into the world of barnacles and sea weed when the landlord for the station's original studios raised the rent.

Broadcasting from an odd-looking facility that resembled two oversized barrels, with a large ship's bell between them, WNOP floated in the Ohio River for over seventeen years. The big illuminated sign above saying "WNOP" has gone dark and the crew has become landlubbers in a larger modern facility. Thanks to reader Ken Hydeman for bringing us aboard.

✓ All weather, all the time? WLW in Hartford, Conn., is going to be sold in the near future, but for the time being they have a unique sound. Instead of the Hispanic programming that made the station the only Spanish speaker in the state, all you'll hear now is the sounds of NOAA Weatheradio retransmitted from the National Weather Service in Hartford. Just turn on 93.7 FM and see for yourself. Reader Fred Chesson kept us under his umbrella from Waterbury, Connecticut.

✓ Durham, North Carolina's Ed Best is interested in swapping airchecks with other

readers and wants to build an aircheck collector's network. Drop us a line at American BandScan if you like hearing out-of-town stations on tape and would want to trade with other *Monitoring Times* readers.

New Station Grants

Congratulations to Northern Illinois University in Rockford for being granted a powerful 50,000 watt station on 90.5 FM. Also look for new stations in these areas: Merced, California, 107.7; Berea, Kentucky, 106.7; Ripley, Ohio, 99.5; Berwick, Pennsylvania, 103.5; Loris, South Carolina 105.9; Rockwood Tennessee 105.7; Emporia, Virginia, 99.1; and Pasco, Washington, 101.3.

For Sale

Things down south are raring to go this month. A Class A FM stereo station with 3,000 cool watts is for sale in Mississippi for cash or terms. Call G. Shurden at 601-843-4091.

A construction permit for a new AM station in a dynamic resort area of Georgia could be yours. If you want to put this 5,000 watt signal on the air, contact J. Evans at Route 4, Box 242, Knights Academy Road, Valdosta, Georgia 31602, or call 912-247-6859.

If the Beehive State is more your bag, how about another construction permit for a 5 kW AM in Southeast Utah? Equity interest is available for this property in the Four Corners area, and it will be the only station in its county. All inquiries will be kept confidential. Write to: P. Mueller, Highway 191 N (6-1), Blanding, Utah 84511, or call 801-678-2261.

International BandScan

✓ AM radio stations are fighting for their share of the pie down under as well as in the states. World traveler and avid *MT* reader M.L. Cauthon III sends us news from Sydney, Australia. The federal government has once again been halted in trying to auction AM licenses to the highest bidders. Eric McCrae of the Macquarie Broadcasting Network is fighting the Australian national radio plan to allow only a limited amount of frequencies for FM broadcasting, with some being purchased for up to 31.5 million in Australian dollars.

A longstanding AM broadcaster, he believes FM is merely a technical advance of an existing system, and that all current AM broadcasters should automatically be granted an FM frequency as well. "AM broadcasters who have missed out on FM licenses fear that they will go out of business due to the superior quality and range of FM signals as the allocations are extended," McCrae cautioned.

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✓ The French Radio Network Nostalgie is about to add another 13 franchised stations to its network in Italy, Spain and Morocco. Eight stations will broadcast in Morocco in French, English, and Spanish. Two more stations will be in Spain, based in Barcelona; and three will originate from the Aosta Valley of Northern Italy. This month, a Moscow station will be added and there are plans to obtain franchises in Jersey and in the United Kingdom.

Nostalgie's network already covers 180 local stations in France, 31 in Belgium, one in Switzerland and one in Luxembourg. The network was recently bought by Monte Carlo Radio from Pierre Alberti, the founder and president of Nostalgie.

✓ The British Forces Broadcasting Service has launched a second station in West Germany called BFBS-2. The service will present mostly talk and informational programming, Mondays through Fridays only from four VHF transmitters: 101.6 in Bielefeld, 102.2 in Munster, 104.7 in Hohne, and 105.0 in Lippstadt.



Credits:

Thanks to *Radio World* and *The Chicago Tribune* and everyone at WEXT-FM, readers David Parsons, Ed Best, Fred Chesson, W. Earle Doan, John Cassidy, Ken Hydeman, Fraser Bonnett, Dean Wallen, Mark Pierce, Malcolm Kaufman, Doug Marsh, Herb Gesell, Allan Hislop, and the British DX Club. Until next month, Happy Trails!

From Here, There, and Everywhere!

Box 1116 has been overflowing this past month. Everybody seems to be getting their share of good catches these days, so let's see what some of the "Outer Limits" gang has been monitoring.

From North Dakota, Mike Larson and Marv Dunn report they came across the famous Radio Free Willy on 7415 from 0240 to 0515. Willy was up to some of his usual antics with comedy commercials and what some might consider rather cynical gags about the 1992 presidential election. Willy did suffer from some rather nasty QRM after about a half hour of broadcasting.

Meanwhile, moving further West, Idaho's Frank Arden came across KNBS on 7416 at 0230. As veteran readers of the "Outer Limits" know, KNBS claims to be "a broadcast service of the California Marijuana Cooperative."

In Ohio, Steven Marsh got a nice selection of logs. Among them was the classic Voice of Laryngitis on 7435 at 0150 UTC. This is one of the most creative stations around. It is always a treat to hear Stan Huxley and the gang. Steve also found Radio USA on 7475.

Patrick Kennigan of Illinois found Secret Society Radio with sixties-era rock music on the approximate frequency of 6850 at 0409. Secret Society Radio can be reached via Box 6527, Baltimore, Maryland 21219. But recent days have not been kind to this station. More about that situation shortly.

One of our regular reporters, Minnesota's Alan Masyga, came across CHGO on 7410 at

0030. CHGO claims to be broadcasting not from Canada but from Chicago. On 7415 at 2355, Alan also logged a rebroadcast of the now legendary Radio Newyork International. Although not certain, he thinks this may have been transmitted by Free Radio One.

Robert Brossell in Wisconsin got Samurai Radio with just 40 watts on 15052 at 2300 UTC. He says you can reach this one through Box 628, Slanesville, West Virginia 25444.

We do get mail from North of the Border. Ontario's Michael Bolitho came across WXZR on 7426 signing off at 2206.

Both Fraser Bonnett in Ohio and this writer are now the happy owners of Hope Radio International QSLs. You can contact them via Slanesville. Meanwhile in Maryland, John Babbis found WHBH, Hillbilly Heaven, with music of Doc Boggs, on 7425 kHz at 1710 UTC.

Pennsylvania's Barry Rowan has added a couple of QSLs to his collection. One was from Radio Garbanzo. The other came from Radio Clandestine. Barry's report to Clandestine made it through to Kingston, New York, before the mailedrop closed. However, the QSL was postmarked from the same city in which he lives!

In Ohio, Dean Hewlett heard an interesting one: WGAR on 7415 in LSB at 0300 UTC. The station was broadcasting a program with a "new-age" religious philosophy. Readers in the Cleveland area are undoubtedly aware that there is a licensed station with the same call letters

broadcasting on 1220 kHz.

We haven't seen very many QSLs from WBST, but Virginia's Pat Murphy got one. The address is Box 40554, Washington, DC 20016. Pat also has some nice loggings including Voice of the Abnormal on 7413 at 0316.

We might end this segment of the column by noting we recently heard from a reader who has been faithfully forwarding mail for one widely heard pirate. The pirate never asked if our reader was willing to do this. He just started announcing the address. However, while he has QSLed some reports, so far he has failed to QSL the reception of the person forwarding the mail. Come on, guys. Is there no honor among Buccaneers?

It's No Secret:

Secret Society Radio was busted. At least that is what Ohio's David Dunn tells us. He heard it on an amateur net the day after the raid. David had been able to log Secret Society Radio on 7412 at 2345, with country music, just a week earlier. Now he doubts he will ever get a reply to his reception report.

Well, David, sometimes even after disaster hits, stations continue to answer their mail. On several occasions this writer has received QSLs from stations after they had been shut down.

Pat Murphy was more fortunate. He did receive a Secret Society QSL just a few days before the raid.

The WENJ Story:

For months now a report has been circulating that Judah Mansbach and Company (see the March "Outer Limits") had struck against a station in New Jersey. There still appears to be no reason to doubt this, given Mansbach's batting average in the last year. However, there had also been reports that the station closed was WENJ.

WENJ says this was not the case. Pat Murphy received a letter from Jack Beane himself in which he emphatically states, "We were not busted by the FCC." Murphy also reports logging and QSLing the station recently.

David Dunn monitored a WENJ broadcast on 7415 at 0152. In this transmission again WENJ denied they had been closed. They did, however, say they were no longer using a mailedrop and instead announced a phone number to be used to report reception.



Inside the secret studio of Scotland's Weekend Music Radio with Jack Russell.

To: DEAN HEWLETT Of: OHIO

This Is To Confirm
Your Reception Of



WENJ

New Jersey's Best Pirate

On: 2-4-90 Time: 0205 UTC
Power: 100W Freq: 7416
Antenna: 1/2 WAVE DIPOLE

Issued By: Jack Beane

Q.S.L. #1/1990

Ohio's Dean Hewlett got the first WENJ QSL of 1990.

Still more evidence pointing to the life and health of WENJ is Dean Hewlett's copy of the first WENJ QSL issued in 1990. But, we have also heard from Steve From Manhattan. Nobody seems to cover the New York metropolitan pirate situation more thoroughly than Steve. He says the publication, *Radio & Records*, reported the bust of WENJ as well as several other stations. Maybe what we really need to completely clarify the situation is a letter from Judah Mansbach himself telling us who bit the dust in New Jersey.

Meanwhile Steve says that despite the current heat, several New York City area stations have resurfaced. Since most of these outfits seem to be publicity shy and the New York pirate feud apparently continues unabated, we will omit any details.

One thing that definitely does have everybody nervous was the previously reported closing of WNYS. New York's Joe Nooney tells us the licensed ham radio operator who put this pirate on the air received a \$1,000 fine. WNYS liked to transmit reports from the John Birch Society and rebroadcasts of Armed Forces Radio Network programs. WNYS used 1010 kHz.

Across the Waves:

Many have logged Scotland's Weekend Music Radio, but few have seen her. Now, thanks to WMR's Jack Russel himself, you can. Jack sent a photo of himself (minus the face) plus WMR's transmitters used for broadcasts on 6, 13, and 15 MHz. Our thanks to Jack, who has quite a following among "Outer Limits" readers.

The most unusual log received recently comes from Steve Harwood of California. He heard Radio Camelot International on 7416 at 0245 UTC with announcer Frank Morita. Radio Camelot asked for two IRCS for a QSL and gave the address of P.O. Box 1437, Hastings, New Zealand. Steve may have found himself a genuine New Zealand pirate. But then, Radio Camelot may also not be the first station to claim a location other than its authentic one. In any case, it is certainly a most interesting log.

Clandestine and Numbers Stuff:

This writer heard Colombian clandestine Radio Patria Libre on 6310 at 0105 with a numbers transmission. Rather than the usual numbers groups, these were "strings" with one of the longer ones containing 34 digits. Radio Quince de Septiembre continues to be heard on 6214. With the Sandinistas defeated in the Nicaraguan elections, there will be considerable pressure on the Contras to disband. Radio Quince may soon be clandestine history. Then again, maybe not.

Florida's Terry Krueger notes that Cuba's Radio Taino was silent for three weeks but finally returned. However, it resumed broadcasting only on 1160, rather than using multiple frequencies as it has often done in the past. Krueger discovered massive jamming on 1100 and 1120. Are these gearing up for the start of TV-Marti?

COMPUTERS

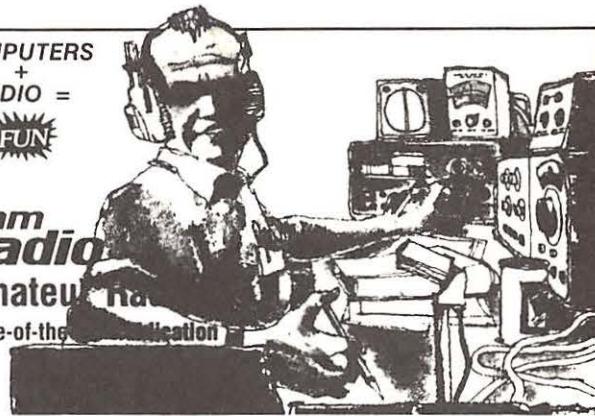
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ham radio magazine, Dept. MT, Greenville, NH 03048

Clandestine expert Mike Fern in California always manages to hear the unusual. He hears a Korean numbers station on 5960 at 0325 UTC Mondays. Mike says also to try 4771, 5870, and 7270 at 1000, 1200, 1400, 1530, 1700 and 2200. The transmissions begin with the Song of General Kim Il-Sung. Numbers are in the dictionary code 3/2 pattern, and the messages apparently intended for agents in Japan and South Korea.

Mike is also hearing the North Korean Voice of National Salvation clandestine on 3480, 4120, 4454, and 6010 at 1000 UTC. All four frequencies have South Korean bubble jammers on them.

In Louisiana Joey Boone is hearing Iranian clandestine Flag of Freedom on 15100 at 0645 UTC. Iowa's Norman Crocker is hearing a great variety of clandestines including Radio Libertas via WHRI on 17830 at 2101 and 11790 and 21840 at 1630 UTC. Radio Libertas wants an independent Croatia free of control from Yugoslavia. Norman is hearing the Cuban American National Foundation's program via WHRI on 9495 at 0100 Monday through Friday.

Clandestine teletype? You bet! If you have the equipment, check 8350.2 around 1900. Florida's Joe Paikovic receives UNITA's transmissions at that time. UNITA opposes the Marxist government of Angola.

And a Final Note:

Both Bill Romberg and Terry Tauchen of Wisconsin sent along newspaper reports of a recent panel discussion in Chicago. Featured were pirate operators making their case against the FCC. Among those present were California's famous Black Rose and the operator of an Illinois FM pirate, WTRA-FM. So turn on your radio. Also, keep tabs on who may be speaking in town. Expect the unexpected. Then tell it to the "Outer Limits."

CQ CQ CQ -- Calling all hams! We've had a number of orders for the new 1990 edition of *The Aero/Marine Beacon Guide* coming from radio amateurs. This is easily noted because many hams do list their call signs on their correspondence. Quite a few mentioned that they were new to listening for beacons on the low frequencies. Gradually I began to understand what was happening.

For many years, hams used highly specialized equipment. These instruments were capable of listening and transmitting on a selected list of frequencies -- the ham bands.

Today the equipment is much less specialized. It seems to be easier to produce full range receivers rather than those limited to just the ham bands. Ergo, the modern amateur has a full range of frequencies to listen to. With a background in CW, the low frequencies are not alien transmissions. Welcome, fellows, we're glad to have you join us.

Just like any other phase of radio, it's always more fun if you know what you're doing. Beacons are a big part of what fills the low frequencies. Just like amateur radio, QTH's are measured in countries or states or provinces. It's just a lot harder to work all states with beacons or to reach 50 countries.

But that shouldn't keep you from trying. Who knows, you may make a few vacation trips that help fill in the blanks. Besides, listening takes a lot less paper work and approval than transmitting from various locations.

Now a short trip into No-Man's-Land. The title of this column is "Below 500 kHz." Mediumwave broadcast stations begin about 540 kHz. That leaves a small gray area not attached anywhere. This item sounds a little more like it belongs here than with some broadcast stations.

I just came across the latest NAVTEX schedules from a Notice to Mariners bulletin. Navtex receivers are supposed to be low-cost receivers that screen incoming messages to eliminate duplicates or those of noninterest, printing the rest on adding-machine size paper. According to the NOTAM bulletin, those who have SITOR equipment can receive NAVTEX by operating in the FEC mode. So Table 1 lists the schedule of USCG stations on 518 kHz as of March 1990.

The broadcasts include offshore weather forecasts, marine advisories, search and rescue information from inland waters to 200 miles offshore. Coastal and high seas weather forecasts are not included. By the summer of 1993, vessels will be required to carry NAVTEX receivers and the Coast Guard will discontinue using medium-frequency CW for safety messages. The

Table 1 - Coast Guard NAVTEX

Location	ID (B1)	Hours	UTC	
Boston (MA (NMF)	F	0445	1045	1645 2245
Miami FL (NMA)	A	0000	0600	1200 1800
San Juan PR (NMR)	R	0415	1015	1615 2215
Portsmouth VA (NMN)	N	0130	0730	1330 1930
New Orleans LA (NMG)	G	0300	0900	1500 2100
Honolulu HI (NMO)	O	0040	0640	1240 1840
Guam (NRV)	V	0100	0700	1300 1900
Adak AK (NO?)	X	0000	0500	1200 1745
Long Beach CA (NMC)	Q	0445	1045	1645 2245
Kodiak, AK (NO?)	?	0300	0900	1500 2115
San Francisco, CA (NMC)	C	0400	1000	1600 2200
Astoria OR (NMC)	W	0130	0730	1330 1930

bottom six locations on the list just began operation in March 1990 while the others had been on for some time.

This month's loggings are from a list submitted by John Carlson of Littleton, Massachusetts. Quite a few of these Canadian beacons get out quite well and are heard well into the middle west and further down the Atlantic coast. It might be worth your while to try for some of these.

Table 2
Beacon Loggings

206	QI	Yarmouth NS
212	SJ	St. John NB
212	PMX	Palmer MA
220	IHM	Mansfield MA
241	SFZ	Smithfield RI
248	UL	Montreal (Dorval) PQ
251	SKR	Bedford MA
257	FFF	Plymouth MA
272	YQA	Muskoka ONT
280	QX	Gander NFLD
289	YLQ	La Tuque PQ
301	PH	Portland ME MCNT
304	BH	Boston MS MCNT
328	BLO	Belknap NH
332	YFM	La Grande 4 PQ
338	DRY	Manchester NH
346	LI	Boston (Logan) MA
359	AS	Amherst NH
368	IMR	Marshfield MA
375	BO	Boston (Logan) MA
382	LQ	Boston (Logan) MA
385	HYX	Saginaw MI
390	JT	Stephenville NFLD
392	CLY	Worcester MA
397	J	St. John NB
404	BC	Baie Comeau PQ
428	COG	Orange VA
516	YWA	Petawawa ONT

Notice the three different two-letter beacons for Logan Airport in Boston. These

are runway markers to assist pilots in lining up their approaches to the runways.

John also reported hearing both MI (Manana Island) and HI (Highland Light) in Maine on the frequency 286. These are sequential beacons which operate during one or two minutes of every six. HI operates during minute 1 and MI during minute 6. Since the sequence is repeated every six minutes, HI comes on just after MI goes off (with a 10 second solid tone).

He also reported three groups of four dashes on 304. The three groups were repeated three times followed by a 10 second tone. This is probably the McNab Point, Ontario marker beacon. It sends a series of dashes or letter T. I only say probably because this is supposed to be a Navigation Season Only (NSO) beacon. It may have been just left on without maintenance and happened to keep going.

Finally, John reported VI on 374. This is a perfect example of negative keying. It is supposed to be a malfunction of the beacon and is usually heard close to the transmitter. In negative keying, a dit becomes the space between two sounds (dits and/or dahs). Conversely, the space between two sounds becomes a dit. A similar transposition occurs between dahs and the spaces between letters. The letter V is the negative key image of the letter B and vice versa.

John lives close enough to Logan Airport and BO is on 375. The B becomes V in negative keying and the two spaces between the three dahs of the letter O become two dits or the letter I.

Many times the negative keying will occur when you are a little off the actual frequency. As you tune toward the true frequency, the negative keying will disappear and the true ID be heard. But we did have a beacon in Indiana that was only heard with negative keying for almost two years. This was a severe transmitter problem that was finally corrected.

RADIO SCAN

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program

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Sunday

May 6th, 13th, 20th, 27th

0004 Radio Berlin Int'l: Give Peace a Chance. A weekly review of events in the international peace movement.
 0014 Radio Berlin Int'l: Yours for the Asking. Panelists give short answers to listener questions.
 0030 BBC: The Ken Bruce Show. A mix of popular music and entertainment news.
 0035 HCJB: Focus 2000. A look at developments in science and technology.
 0055 HCJB: DX Party Line. Brent Allred presents news on shortwave radio and communications.
 0101 BBC: Play of the Week. Hour-long drama selections.
 0110 Radio Berlin Int'l: Musical Interlude. A short break featuring East German music.
 0112 Radio Berlin Int'l: Commentary. East German comments on the day's top news stories.



If you hear a Welsh lilt on the BBC World Service, it belongs to continuity announcer Gaenor Howells.

LEGEND

- * The first four digits of an entry are the program start time in UTC.
- * The time is followed by the station name, program name, and a brief summary of the program's content.
- * Some listings may be followed by "See X 0000." The letter stands for a day of the week:

S=Sunday M=Monday
 T=Tuesday W=Wednesday
 H=Thursday F=Friday
 A=Saturday

The four digits stand for a time in UTC. Listeners should check back to that date and time to find out more about that particular program.

- * All broadcasts are listed in chronological order, starting on Sunday at 0000 UTC and ending on Saturday at 2359 UTC.
- * All days are in UTC. Remember that if you are listening in North

MT Program Team

Kannon Shanmugam, Program Manager

4412 Turnberry Circle
Lawrence, KS 66047

Jim Frimmel Willow Park, Texas

Dale Vanderpoel Ft. Lauderdale, Florida

0115 Radio Japan (North America): Japan Music Scene. Music, background, and interviews.
 0115 Radio Japan: This Week. The major events of the week, and current affairs topics in Japan.
 0119 Radio Berlin Int'l: Give Peace a Chance. See S 0004.
 0129 Radio Berlin Int'l: Yours for the Asking. See S 0014.
 0155 Radio Berlin Int'l: Musical Interlude. See S 0110.
 0157 Radio Berlin Int'l: Commentary. See S 0112.
 0204 Radio Berlin Int'l: Give Peace a Chance. See S 0004.
 0209 BBC: British Press Review. Survey of editorial opinion in the British press.
 0214 Radio Berlin Int'l: Yours for the Asking. See S 0014.
 0215 BBC: The Learning World. John Turtle provides a look at education issues.
 0230 BBC: Taking Issue. A program of round-table discussion on various topics of current relevance.
 0235 HCJB: Focus 2000. See S 0035.
 0255 HCJB: DX Party Line. See S 0055.
 0310 Radio Berlin Int'l: Musical Interlude. See S 0110.
 0312 Radio Berlin Int'l: Commentary. See S 0112.
 0315 BBC: From Our Own Correspondent. In-depth news stories from correspondents worldwide.
 0315 Radio Japan (Americas): Japan Music Scene. See S 0115.
 0315 Radio Japan: This Week. See S 0115.
 0319 Radio Berlin Int'l: Give Peace a Chance. See S 0004.
 0329 Radio Berlin Int'l: Yours for the Asking. See S 0014.
 0330 BBC: Panel Game. A quiz show of a topical nature.
 0355 Radio Berlin Int'l: Musical Interlude. See S 0110.
 0357 Radio Berlin Int'l: Commentary. See S 0112.
 0404 Radio Berlin Int'l: Give Peace a Chance. See S 0004.
 0414 Radio Berlin Int'l: Yours for the Asking. See S 0014.
 0430 BBC: The Singing Stars. The careers of solo singers like Perry Como, Rosemary Clooney, Bobby Darin, and Frankie Laine.
 0445 BBC: Personal View. A personal opinion on topical issues in British life.
 0505 HCJB: Focus 2000. See S 0035.
 0509 BBC: Twenty-Four Hours. Analysis of the main news of the day.
 0515 Radio Japan: Commentary. Opinions on current news events worldwide.

American prime time, it is actually the next morning UTC. For example, if you are listening to a program at 8:01 pm [EDT] on your Thursday night, that's equal to 0001 UTC and therefore Friday morning UTC.

We suggest that you tune in to a program a few minutes before the schedule start time, as some stations have tentative schedules which may slightly vary. We invite listeners and stations to send program information to the program manager at the address above.

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presents shortwave radio news, features, and reception reports.

1544 Radio Japan: Japan Music Scene. See S 0115.
 1615 BBC: Taking Issue. See S 0230.
 1645 BBC: Letter from America. See S 0545.
 2305 BBC: Words of Faith. See S 0540.
 2310 BBC: Book Choice. See S 0745.
 2315 BBC: Letter from America. See S 0545.
 2315 Radio Japan: Commentary. See S 0515.
 2320 Radio Japan: Hello from Tokyo. See S 0520.
 2330 BBC: Russia, The Drive to Empire. See S 1401.
 2355 Radio Berlin Int'l: Musical Interlude. See S 0110.
 2357 Radio Berlin Int'l: Commentary. See S 0112.

Monday

May 7th, 14th, 21st, 28th

0001 Radio Berlin Int'l: Mailbag. A weekend feature answering listener letters and thanking listeners for writing.
 0013 Radio Berlin Int'l: Weekend Magazine. A look at many different cultural events in East Germany.
 0030 BBC: In Praise of God. A half-hour program of worship.
 0035 HCJB: Get Set. See S 0735.
 0055 HCJB: Saludos Amigos. See S 0755.
 0101 BBC: Opera of the Week. Background and excerpts from operas by Pushkin, Lehar, Puccini, and Mozart.
 0110 Radio Berlin Int'l: Musical Interlude. See S 0110.
 0112 Radio Berlin Int'l: Commentary. See S 0112.
 0115 Radio Japan (North America): Let's Learn Japanese. Japanese language lessons for English speakers.
 0115 Radio Japan: Commentary. See S 0515.
 0116 Radio Berlin Int'l: Mailbag. See M 0001.
 0125 Radio Japan: DX Corner. See S 1525.
 0128 Radio Berlin Int'l: Weekend Magazine. See M 0013.
 0144 Radio Japan: Japan Music Scene. See S 0115.
 0145 BBC: On the Record. Robert Matthew-Walker presents a history of classical music recordings.
 0155 Radio Berlin Int'l: Musical Interlude. See S 0110.
 0157 Radio Berlin Int'l: Commentary. See S 0112.
 0201 Radio Berlin Int'l: Mailbag. See M 0001.



Radio Berlin International often verifies with cards showing landmarks from various locations; this one was sent to us by John Carson of Oklahoma.

0209 BBC: British Press Review. See S 0209.
 0213 Radio Berlin Int'l: Weekend Magazine. See M 0013.
 0215 BBC: Andy Kershaw's World of Music. Exotic and innovative music from the world over.
 0230 BBC: Science in Action. The latest in scientific developments.
 0235 HCJB: Get Set. See S 0735.
 0255 HCJB: Saludos Amigos. See S 0755.
 0310 Radio Berlin Int'l: Musical Interlude. See S 0110.
 0312 Radio Berlin Int'l: Commentary. See S 0112.
 0315 BBC: Good Books. A recommendation of a book to read.
 0315 Radio Japan (Americas): Let's Learn Japanese. See M 0115.
 0315 Radio Japan: Commentary. See S 0515.
 0316 Radio Berlin Int'l: Mailbag. See M 0001.
 0325 Radio Japan: DX Corner. See S 1525.
 0328 Radio Berlin Int'l: Weekend Magazine. See M 0013.
 0330 BBC: Anything Goes. See S 1430.
 0344 Radio Japan: Japan Music Scene. See S 0115.
 0355 Radio Berlin Int'l: Musical Interlude. See S 0110.
 0357 Radio Berlin Int'l: Commentary. See S 0112.
 0401 Radio Berlin Int'l: Mailbag. See M 0001.

0413 Radio Berlin Int'l: Weekend Magazine. See M 0013.
 0430 BBC: Off the Shelf. A reading selected from the best of world literature.
 0445 BBC: Tech Talk. A series of reports on engineering and technology.
 0505 HCJB: Get Set. See S 0735.
 0509 BBC: Twenty-Four Hours. See S 0509.
 0515 Radio Japan: Commentary. See S 0515.
 0520 Radio Japan: Cross Currents. A current affairs program featuring views from Japan and abroad.
 0525 HCJB: Saludos Amigos. See S 0755.
 0530 BBC: Waveguide. See S 0750.
 0536 Radio Japan: Let's Learn Japanese. See M 0115.
 0540 BBC: Words of Faith. See S 0540.
 0545 BBC: Recording of the Week. A personal choice from the latest classical music releases.
 0551 Radio Japan: Commentary. See S 0515.
 0556 Radio Japan: Tokyo Pop-In. A short segment featuring a popular song from Japan.
 0600 HCJB: Music in the Night. Brian Seeley presents music and thoughts for the end of the day.
 0630 BBC: Russia, The Drive to Empire. See S 1401.

NEWS GUIDE

This is your guide to news broadcasts on the air. All broadcasts are daily unless otherwise noted by brackets. These brackets enclose day codes denoting days of broadcast. The codes are as follows:

S= Sunday M= Monday
 T= Tuesday W= Wednesday
 H= Thursday F= Friday
 A= Saturday

We invite listeners and stations to send program information to the program manager.

0000 BBC: Newsdesk
 0000 Christian Science Monitor: News
 0000 Kol Israel: News
 0000 KVOH: UPi News [T-A]
 0000 Radio Australia: International Report
 0000 Radio Beijing: News
 0000 Radio Canada Int'l: News [S-M]; World at 6 [T-A]
 0000 Radio Havana Cuba: International News [M-A]
 0000 Radio Moscow: News
 0000 Radio New Zealand Int'l: News
 0000 Radio Yugoslavia: News
 0000 Spanish National Radio: News
 0000 Voice of America: News
 0000 WWR: USA Radio News [T-A]
 0005 Radio Pyongyang: News
 0010 Radio Beijing: News About China
 0030 Christian Science Monitor: News [T-F]
 0030 HCJB: Latin American News
 0030 Radio Budapest: News
 0030 Radio Canada Int'l: News [S-M]
 0030 Radio Havana Cuba: Newsbreak [M-A]
 0030 Radio Moscow (World Service): News in Brief
 0030 Radio Netherlands: News [T-S]
 0030 Voice of America (Americas, E.Asia): News [T-S]
 0030 Voice of America (E.Asia): News (English) [M]
 0051 Spanish National Radio: News Summary [S]
 0055 KUSW: News [T-S]
 0055 WRNO: ABC News [W-H, A]
 0100 BBC: News Summary
 0100 Belize Radio One: Network News
 0100 Christian Science Monitor: News
 0100 Deutsche Welle: World News
 0100 Kol Israel: News
 0100 KVOH: UPi News [T-A]
 0100 Radio Australia: World and Australian News
 0100 Radio Berlin Int'l: News
 0100 Radio Canada Int'l: News [S-M]
 0100 Radio Havana Cuba: International News [M-A]
 0100 Radio Japan: News
 0100 Radio Moscow: News
 0100 Radio New Zealand Int'l: News
 0100 Radio Prague: News
 0100 Radiotelevisione Italiana: News
 0100 RAE, Buenos Aires: News
 0100 Spanish National Radio: News
 0100 Voice of America: News
 0100 Voice of Indonesia: News
 0100 WWR: USA Radio News [T-S]
 0115 Radio Havana Cuba: Cuban Nat'l News [M-A]
 0125 HCJB: World News
 0130 Christian Science Monitor: News [T-F]
 0130 Radio Havana Cuba: News [M-A]

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0709 BBC: Twenty-Four Hours. See S 0509.
 0715 Radio Japan: Commentary. See S 0515.
 0720 Radio Japan: Cross Currents. See M 0520.
 0730 BBC: Taking Issue. See S 0230.
 0735 HCJB: News Feature. Current affairs, features, and interviews from HCJB correspondents.
 0736 Radio Japan: Let's Learn Japanese. See M 0115.
 0751 Radio Japan: Commentary. See S 0515.
 0755 HCJB: Dateline '90. Jan Shober looks at issues of the decade.
 0756 Radio Japan: Tokyo Pop-In. See M 0556.
 1115 BBC: Health Matters. New developments in the world of medical science and fitness.
 1115 Radio Japan: Commentary. See S 0515.
 1120 Radio Japan: Cross Currents. See M 0520.
 1130 BBC: Composer of the Month. A month-long series on a particular classical music composer.
 1136 Radio Japan: Let's Learn Japanese. See M 0115.
 1151 Radio Japan: Commentary. See S 0515.
 1156 Radio Japan: Tokyo Pop-In. See M 0556.
 1215 BBC: Round Britain Quiz. A resident London

team takes on teams from around Britain in a cryptic quiz.
 1245 BBC: Sports Roundup. See S 1330.
 1309 BBC: Twenty-Four Hours. See S 0509.
 1330 BBC: Andy Kershaw's World of Music. See M 0215.
 1345 BBC: Personal View. See S 0445.
 1405 BBC: Outlook. Conversation, controversy, and color from Britain and the rest of the world.
 1415 Radio Japan: Commentary. See S 0515.
 1420 Radio Japan: Cross Currents. See M 0520.
 1430 BBC: Off the Shelf. See M 0430.
 1436 Radio Japan: Let's Learn Japanese. See M 0115.
 1445 BBC: The Learning World. See S 0215.
 1451 Radio Japan: Commentary. See S 0515.
 1456 Radio Japan: Tokyo Pop-In. See M 0556.
 1515 BBC: Opera of the Week. See M 0101.
 1515 Radio Japan: Commentary. See S 0515.
 1520 Radio Japan: Cross Currents. See M 0520.
 1536 Radio Japan: Let's Learn Japanese. See M 0115.
 1551 Radio Japan: Commentary. See S 0515.
 1556 Radio Japan: Tokyo Pop-In. See M 0556.



"Morning in the Mountains" (HCJB) hosts Paul Bell (front) and Ray Hinchman.

news guide cont'd from p.57

0130 Radio Moscow (World Service): News in Brief
 0145 Radio Berlin Int'l: News
 0151 Spanish National Radio: News Summary [S]
 0155 KUSW: News [T-S]
 0155 Voice of Indonesia: News In Brief
 0200 BBC: World News
 0200 Christian Science Monitor: News
 0200 Deutsche Welle: World News
 0200 Radio Australia: International Report
 0200 Radio Bras, Brasilia: News
 0200 Radio Bucharest: News
 0200 Radio Havana Cuba: International News [M-A]
 0200 Radio Kiev: News
 0200 Radio Moscow: News
 0200 Radio New Zealand Int'l: News [A-S]
 0200 Radio RSA: News
 0200 Swiss Radio Int'l: News
 0200 Voice of America: News
 0200 Voice of Free China: News and Commentary
 0200 WWCR: USA Radio News [T-A]
 0215 Radio Cairo: News
 0230 Christian Science Monitor (E.Africa): News [M]
 0230 Christian Science Monitor: News [T-F]
 0230 HCJB: Latin American News

0230 Radio Berlin Int'l: News
 0230 Radio Havana Cuba: Newsbreak [M-A]
 0230 Radio Moscow (World Service): News in Brief
 0230 Radio Pakistan: News (Special English)
 0230 Radio Portugal: News [T-A]
 0230 Radio Tirana, Albania: News
 0250 Radio Yerevan: News
 0255 KUSW: News [T-S]
 0300 BBC: World News
 0300 Belize Radio One: News
 0300 Christian Science Monitor: News
 0300 Deutsche Welle: World News
 0300 Radio Australia: World and Australian News
 0300 Radio Beijing: News
 0300 Radio Berlin Int'l: News
 0300 Radio Canada Int'l: News [M-F]
 0300 Radio for Peace Int'l: News [T,A]
 0300 Radio Havana Cuba: International News [M-A]
 0300 Radio Japan: News
 0300 Radio Moscow: News
 0300 Radio New Zealand Int'l: News [A-S]
 0300 Radio Prague: News
 0300 RAE, Buenos Aires: News
 0300 Voice of America: News
 0300 Voice of Free China: News and Commentary
 0300 Voice of Turkey: News

0300 WRNO: ABC News [F]
 0300 WWCR: USA Radio News [T-S]
 0309 BBC: News About Britain
 0310 Radio Beijing: News About China
 0315 Radio Cairo: News
 0315 Radio France Int'l: News
 0315 Radio Havana Cuba: Cuban Nat'l News [M-A]
 0325 HCJB: World News
 0330 Christian Science Monitor (E.Africa): News [M]
 0330 Christian Science Monitor: News [T-F]
 0330 Radio Havana Cuba: News [M-A]
 0330 Radio Moscow (World Service): News In Brief
 0330 Radio Netherlands: News [T-S]
 0330 Radio Tirana, Albania: News
 0330 UAE Radio, Dubai: News
 0345 Radio Berlin Int'l: News
 0350 Radiotelevisione Italiana: News
 0355 KUSW: News [T-S]
 0400 BBC: Newsdesk
 0400 Christian Science Monitor: News
 0400 Deutsche Welle: World News
 0400 Kol Israel: News
 0400 Radio Australia: International Report
 0400 Radio Beijing: News
 0400 Radio Bucharest: News
 0400 Radio Canada Int'l: News [M-F]

Tuesday

May 1st, 8th, 15th, 22nd, 29th

0001 Radio Berlin Int'l: Our Report. Reports and updates on events happening in East Germany and worldwide.
 0006 Radio Berlin Int'l: Spotlight on Sport. A wrap-up of the weekend's national and international sports results.
 0013 Radio Berlin Int'l: RBI DX Club Meeting. Articles for DX'ers and responses to member comments.
 0030 BBC: Megamix. A compendium of music, sport, fashion, health, travel, news and views for young people.
 0035 HCJB: News Feature. See M 0735.
 0055 HCJB: Dateline '90. See M 0755.
 0101 BBC: Outlook. See M 1405.
 0110 Radio Berlin Int'l: Musical Interlude. See S 0110.
 0112 Radio Berlin Int'l: Commentary. See S 0112.
 0115 Radio Japan: Commentary. See S 0515.
 0116 Radio Berlin Int'l: Our Report. See T 0001.
 0120 Radio Japan: Cross Currents. See M 0520.
 0121 Radio Berlin Int'l: Spotlight on Sport. See T 0006.
 0125 BBC: Financial News. See M 2310.
 0126 Radio Japan (North America): Tokyo Pop-In. See M 0556.

BULLETIN BOARD

THIS IS THE BBC, THIS IS THE BBC:
The BBC World Service has proven over the last few months that it is no better than American television networks when it comes to reruns. A newly-instituted policy at the BBC has led to replays of several series from last year.

This month's repeats include "Russia, The Drive To Empire" (Sundays at 1401 UTC, repeated at 2330 UTC and on Mondays at 0630 UTC) and "Playing God," a look at genetic engineering (May 11th and 18th at 0730 UTC, repeated at 1215 UTC).

HCJB'S DRAMATIC CHANGES: After February's major attack on Ecuadorian religious station HCJB, the station has made major programming changes, valid from May 6. Almost all Quito-produced programs have been consolidated into an hour-long segment, entitled "Studio 9." The program "Passport" has been dropped, and Dee Baklenko's "Happiness Is" now airs twice weekly, instead of daily. Complete details are in this month's program listing.

NEW TIME SLOT FOR RCI: Radio Canada International has added a new 45-minute broadcast, featuring programs produced by the Canadian Broadcasting

Corporation, the domestic radio service in Canada. The program lineup features "The Inside Block," a sports feature (Monday), "The Food Show" (Tuesday), "Open House," a look at modern religion (Wednesday), "Media File" (Thursday), and "The Arts Tonight" (Friday). The programs can be heard at 0530 UTC, with news and closing stock market prices preceding them at 0515 UTC.

NEW BBC PROGRAM BLOCK: The BBC World Service has quietly launched a new Sunday news program, "News and Twenty-Four Hours on Sunday" (1300 UTC). It is a sort of 45-minute "Newshour," with news, correspondent reports, and analysis all rolled into one integrated package. It's much more logical than the usual "News" / "Twenty-Four Hours" combination heard in that time slot. It also paves the way for the introduction of another "Newshour" in that 1300 UTC slot. Stay tuned...

SOCER OR FOOTBALL?: On May 12th, the BBC World Service carries the English FA Cup soccer (or is it football?) final at 1330 UTC. The game is tentatively scheduled to air on ESPN as well.

0128	Radio Berlin Int'l: RBI DX Club Meeting. See T 0013.	0201	Radio Berlin Int'l: Our Report. See T 0001.	0720	Radio Japan: Asia Now. See T 0520.
0130	BBC: Short Story. Brief tales written by BBC listeners.	0206	Radio Berlin Int'l: Spotlight on Sport. See T 0006.	0730	BBC: Europe's World. See T 0145.
0136	Radio Japan: Let's Learn Japanese. See M 0115.	0209	BBC: British Press Review. See S 0209.	0735	HCJB: News Feature. See M 0735.
0145	BBC: Europe's World. A magazine program reflecting life in Europe and its links with other parts of the world.	0213	Radio Berlin Int'l: RBI DX Club Meeting. See T 0013.	0736	Radio Japan: Let's Practice Japanese. See T 0536.
0151	Radio Japan: Commentary. See S 0515.	0215	BBC: Network UK. A look at the issues and events that affect the lives of people throughout the UK.	0745	BBC: Network UK. See T 0215.
0155	Radio Berlin Int'l: Musical Interlude. See S 0110.	0230	BBC: Sports International. Feature program on a topic or person making sports headlines.	0751	Radio Japan: Commentary. See S 0515.
0156	Radio Japan: Tokyo Pop-In. See M 0556.	0235	HCJB: News Feature. See M 0735.	0755	HCJB: Happiness Is. Interviews, books, travel logs, and more, presented by Dee Baklenko.
0157	Radio Berlin Int'l: Commentary. See S 0112.	0255	HCJB: Dateline '90. See M 0755.	0756	Radio Japan: Tokyo Pop-In. See M 0556.
		0310	Radio Berlin Int'l: Musical Interlude. See S 0110.	1115	BBC: Waveguide. See S 0750.
				1115	Radio Japan: Commentary. See S 0515.
				1120	Radio Japan: Asia Now. See T 0520.
0400	Radio Havana Cuba: International News [M-A]	0500	Radio Korea: News	0605	Radio Pyongyang: News
0400	Radio Moscow: News	0500	Radio Moscow: News	0615	Radio Canada Int'l: News [M-F]
0400	Radio New Zealand Int'l: News	0500	Radio New Zealand Int'l: News	0630	Christian Science Monitor: News [M-F]
0400	Radio Tanzania: News	0500	Spanish National Radio: News	0630	Radio Finland: Northern Report [T-A]
0400	Swiss Radio Int'l: News	0500	Voice of America: News	0630	Radio Havana Cuba: Newsbreak [M-A]
0400	Voice of America: News	0500	WWCR: USA Radio News [T-A]	0630	Radio Moscow (World Service): News In Brief
0400	WWCR: USA Radio News [M-A]	0515	Radio Berlin Int'l: News	0630	Radio Polonia: News
0405	Radio Pyongyang: News	0515	Radio Havana Cuba: Cuban Nat'l News [M-A]	0630	Radio Tirana, Albania: News
0410	Radio Beijing: News About China	0530	Christian Science Monitor (E.Africa): News [M]	0630	Swiss Radio Int'l: News
0425	Radiotelevisione Italiana: News	0530	Christian Science Monitor: News [T-F]	0645	Radio Bucharest: News
0430	Christian Science Monitor (E.Africa): News [M]	0530	Radio Bucharest: News	0645	Radio Canada Int'l: News [M-F]
0430	Christian Science Monitor: News [T-F]	0530	Radio Havana Cuba: News [M-A]	0655	KUSW: News [S]
0430	Radio Havana Cuba: Newsbreak [M-A]	0530	Radio Jordan: News	0700	BBC: World News
0430	Radio Moscow (World Service): News In Brief	0530	Radio Moscow (World Service): News In Brief	0700	BRT, Brussels: News [M-F]
0430	Radio Netherlands: News [M-A]	0530	UAE Radio, Dubai: News	0700	Christian Science Monitor: News
0430	Radio Tirana, Albania: News	0551	Spanish National Radio: News Summary [S]	0700	Radio Australia: World and Australian News
0455	KUSW: News [S, T-F]	0555	HCJB: World News	0700	Radio Havana Cuba: International News [M-A]
0455	Radio Tanzania: News	0555	KUSW: News [S, T-F]	0700	Radio Japan: News
0500	BBC: World News	0600	BBC: Newsdesk	0700	Radio Korea: News
0500	Christian Science Monitor: News	0600	Christian Science Monitor: News	0700	Radio Moscow (World Service): News
0500	Deutsche Welle: World News	0600	Deutsche Welle: World News	0700	Radio New Zealand Int'l: News [A-S]
0500	HCJB: Latin American News	0600	Radio Australia: International Report	0700	Radio Tirana, Albania: News
0500	Radio Australia: World and Australian News	0600	Radio Havana Cuba: International News [M-A]	0700	Voice of Free China: News and Commentary
0500	Radio Berlin Int'l: News	0600	Radio Moscow: News	0715	Radio Havana Cuba: Cuban Nat'l News [M-A]
0500	Radio Havana Cuba: International News [M-A]	0600	Radio New Zealand Int'l: News	0730	Christian Science Monitor: News [M-F]
0500	Radio Japan: News	0600	Voice of America: News	0730	HCJB: Latin American News

program

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1125 BBC: Book Choice. See S 0745.
 1130 BBC: Megamix. See T 0030.
 1136 Radio Japan: Let's Practice Japanese. See T 0536.
 1151 Radio Japan: Commentary. See S 0515.
 1156 Radio Japan: Tokyo Pop-In. See M 0556.
 1215 BBC: Mullittrack 1: Top 20. See M 2330.
 1245 BBC: Sports Roundup. See S 1330.
 1309 BBC: Twenty-Four Hours. See S 0509.
 1330 BBC: Network UK. See T 0215.
 1345 BBC: The Singing Stars. See S 0430.
 1405 BBC: Outlook. See M 1405.
 1415 Radio Japan: Commentary. See S 0515.
 1420 Radio Japan: Asia Now. See T 0520.
 1430 BBC: Off the Shelf. See M 0430.
 1436 Radio Japan: Let's Practice Japanese. See T 0536.
 1445 BBC: Off the Record. See M 0145.
 1451 Radio Japan: Commentary. See S 0515.
 1456 Radio Japan: Tokyo Pop-In. See M 0556.
 1515 BBC: A Jolly Good Show. Dave Lee Travis presents listener record requests and dedications, and the UK's top ten albums.
 1515 Radio Japan: Commentary. See S 0515.
 1520 Radio Japan: Asia Now. See T 0520.
 1536 Radio Japan: Let's Practice Japanese. See T 0536.
 1551 Radio Japan: Commentary. See S 0515.
 1556 Radio Japan: Tokyo Pop-In. See M 0556.
 1615 BBC: Omnibus. A half-hour program on practically any topic.
 1645 BBC: The World Today. See M 1645.
 2305 BBC: Commentary. See M 2305.
 2310 BBC: Financial News. See M 2310.
 2315 BBC: Concert Hall. See S 1515.
 2315 Radio Japan: Commentary. See S 0515.
 2320 Radio Japan: Asia Now. See T 0520.
 2336 Radio Japan: Let's Practice Japanese. See T 0536.
 2351 Radio Japan: Commentary. See S 0515.
 2355 Radio Berlin Int'l: Musical Interlude. See S 0110.
 2356 Radio Japan: Tokyo Pop-In. See M 0556.
 2357 Radio Berlin Int'l: Our Report. See T 0001.



Radio Japan

Radio Japan QSL from Gert Rudolph Jahncke, Quebec.

new issues, history, and other information about stamps.
 0012 Radio Berlin Int'l: People in Profile. An in-depth focus on the economy, science, and culture in the GDR.
 0030 BBC: Omnibus. See T 1615.
 0035 HCJB: News Feature. See M 0735.
 0055 HCJB: Dateline '90. See M 0755.
 0101 BBC: Outlook. See M 1405.
 0110 Radio Berlin Int'l: Musical Interlude. See S 0110.
 0112 Radio Berlin Int'l: Our Report. See T 0001.
 0115 Radio Japan: Commentary. See S 0515.
 0116 Radio Berlin Int'l: Commentary. See S 0112.
 0120 Radio Japan: Asia Now. See T 0520.
 0121 Radio Berlin Int'l: Musical Interlude. See S 0110.
 0123 Radio Berlin Int'l: Stamp Album. See W 0008.
 0125 BBC: Financial News. See M 2310.
 0126 Radio Japan (North America): Tokyo Pop-In. See M 0556.
 0127 Radio Berlin Int'l: People in Profile. See W 0012.

Wednesday

May 2nd, 9th, 16th, 23rd, 30th

0001 Radio Berlin Int'l: Commentary. See S 0112.
 0006 Radio Berlin Int'l: Musical Interlude. See S 0110.
 0008 Radio Berlin Int'l: Stamp Album. Updates on

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0730 Radio Havana Cuba: News [M-A]
 0730 Radio Moscow (World Service): News in Brief
 0730 Radio Netherlands: News [M-A]
 0745 Radio Berlin Int'l: News
 0755 KUSW: News [S]
 0800 BBC: World News
 0800 Christian Science Monitor: News
 0800 Radio Australia: International Report
 0800 Radio Finland: Northern Report [T-S]
 0800 Radio Jordan: News Summary
 0800 Radio Moscow (World Service): News
 0800 Voice of Indonesia: News
 0805 Radio Pyongyang: News
 0825 HCJB: World News
 0830 Christian Science Monitor: News [M-F]
 0830 Radio Finland: Northern Report [T-S]
 0830 Radio Moscow (World Service): News in Brief
 0830 Radio Netherlands: News [M-A]
 0830 Swiss Radio Int'l: News
 0855 KUSW: News [S]
 0855 Voice of Indonesia: News in Brief
 0900 BBC: World News
 0900 BRT, Brussels: News [M-F]
 0900 Christian Science Monitor: News

0900 Deutsche Welle: World News
 0900 Radio Australia: World and Australian News
 0900 Radio Berlin Int'l: News
 0900 Radio Japan: News
 0900 Radio Moscow (World Service): News
 0900 Radio New Zealand Int'l: News
 0930 Christian Science Monitor: News [M-F]
 0930 Deutsche Welle: African News [M]
 0930 Radio Moscow (World Service): News in Brief
 0945 Radio Berlin Int'l: News
 0955 KUSW: News [S]
 1000 BBC: News Summary
 1000 Christian Science Monitor: News
 1000 HCJB: Latin American News
 1000 Kol Israel: News
 1000 Radio Australia: International Report
 1000 Radio Jordan: News Summary
 1000 Radio Korea: News
 1000 Radio Moscow (World Service): News
 1000 Radio New Zealand Int'l: News
 1000 Radio Tanzania: News
 1000 Swiss Radio Int'l: News
 1000 Voice of America: News
 1030 Radio Moscow (World Service): News in Brief
 1030 Radio Netherlands: News [M-A]
 1030 UAE Radio, Dubai: News

1055 HCJB: World News
 1055 KUSW: News [S]
 1100 BBC: World News
 1100 Christian Science Monitor: News [M-F]
 1100 Deutsche Welle: World News
 1100 Radio Australia: World and Australian News
 1100 Radio Beijing: News
 1100 Radio Berlin Int'l: News
 1100 Radio Finland: Northern Report [T-F]
 1100 Radio Japan: News
 1100 Radio Jordan: News Summary
 1100 Radio Moscow (World Service): News
 1100 Radio New Zealand Int'l: News
 1100 Radio RSA: News
 1100 Swiss Radio Int'l: News
 1100 Trans World Radio, Bonaire: News [M-F]
 1100 Voice of America: News
 1105 Radio Pakistan: News (Special English)
 1105 Radio Pyongyang: News
 1109 BBC: News About Britain
 1110 Belize Radio One: News Summary [T-F]
 1110 Radio Beijing: News About China
 1120 Belize Radio One: News Summary [A]
 1125 Belize Radio One: News Summary [M]
 1130 Christian Science Monitor: News
 1130 Deutsche Welle: African News [M]

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0520 Radio Japan: Radio Japan Journal. Information on the latest developments in the news.
 0525 HCJB: Dateline '90. See M 0755.
 0530 BBC: Financial News. See M 2310.
 0536 Radio Japan: Asian Crossroads. Events in Asia and the Pacific.
 0540 BBC: Words of Faith. See S 0540.
 0545 BBC: The World Today. See M 1645.
 0551 Radio Japan: Commentary. See S 0515.
 0556 Radio Japan: Tokyo Pop-In. See M 0556.
 0630 BBC: Meridian. The world of the arts, including music, drama, and books.
 0709 BBC: Twenty-Four Hours. See S 0509.
 0715 Radio Japan: Commentary. See S 0515.
 0720 Radio Japan: Radio Japan Journal. See W 0520.
 0730 BBC: Development '90. Aid and development issues.
 0735 HCJB: News Feature. See M 0735.
 0736 Radio Japan: Asian Crossroads. See W 0536.
 0751 Radio Japan: Commentary. See S 0515.
 0755 HCJB: Happiness Is. Interviews, books, travel logs, and more, presented by Dee Baklenko.
 0756 Radio Japan: Tokyo Pop-In. See M 0556.
 1115 BBC: Country Style. See W 0145.
 1115 Radio Japan: Commentary. See S 0515.
 1120 Radio Japan: Radio Japan Journal. See W 0520.
 1130 BBC: Meridian. See W 0630.
 1136 Radio Japan: Asian Crossroads. See W 0536.
 1151 Radio Japan: Commentary. See S 0515.
 1156 Radio Japan: Tokyo Pop-In. See M 0556.
 1215 BBC: Goldmine in the Dustbin. A look at recycling today, and the growth of the environmental movement.
 1225 BBC: The Farming World. Issues in agriculture.
 1245 BBC: Sports Roundup. See S 1330.
 1309 BBC: Twenty-Four Hours. See S 0509.
 1330 BBC: Development '90. See W 0730.
 1405 BBC: Outlook. See M 1405.
 1415 Radio Japan: Commentary. See S 0515.
 1420 Radio Japan: Radio Japan Journal. See W 0520.
 1430 BBC: Off the Shelf. See M 0430.
 1436 Radio Japan: Asian Crossroads. See W 0536.
 1445 BBC: Business Matters. See W 0430.
 1451 Radio Japan: Commentary. See S 0515.
 1456 Radio Japan: Tokyo Pop-In. See M 0556.
 1515 BBC: Bread, Hashish, and Moonlight. See M 2315.
 1515 Radio Japan: Commentary. See S 0515.
 1520 Radio Japan: Radio Japan Journal. See W 0520.

1530 BBC: Winston Comes to Town. A comedy serial about a poacher in rural England (except May 30th: Two Cheers for May, a satirical look at the month just past).
 1536 Radio Japan: Asian Crossroads. See W 0536.
 1551 Radio Japan: Commentary. See S 0515.
 1556 Radio Japan: Tokyo Pop-In. See M 0556.
 1615 BBC: Counterpoint. See T 0630.
 1645 BBC: The World Today. See M 1645.
 2305 BBC: Commentary. See M 2305.
 2310 BBC: Financial News. See M 2310.
 2315 BBC: Good Books. See M 0315.
 2315 Radio Japan: Commentary. See S 0515.
 2320 Radio Japan: Radio Japan Journal. See W 0520.
 2330 BBC: Multitrack 2. Graham Bannerman presents new pop music records, interviews, news, and competitions.
 2336 Radio Japan: Asian Crossroads. See W 0536.
 2351 Radio Japan: Commentary. See S 0515.
 2355 Radio Berlin Int'l: Musical Interlude. See S 0110.
 2356 Radio Japan: Tokyo Pop-In. See M 0556.
 2357 Radio Berlin Int'l: Our Report. See T 0001.

Thursday

May 3rd, 10th, 17th, 24th, 31st

0001 Radio Berlin Int'l: Commentary. See S 0112.
 0007 Radio Berlin Int'l: Sounds Around. All kinds of music, including pop, jazz, rock, and folk.
 0014 Radio Berlin Int'l: Viewpoint. East German comment on current happenings in the news.
 0030 BBC: Winston Comes to Town (except May 31st: Two Cheers for May). See W 1530.
 0035 HCJB: News Feature. See M 0735.
 0055 HCJB: Ham Radio Today. See W 0755.
 0101 BBC: Outlook. See M 1405.
 0110 Radio Berlin Int'l: Musical Interlude. See S 0110.
 0112 Radio Berlin Int'l: Our Report. See T 0001.
 0115 Radio Japan: Commentary. See S 0515.
 0116 Radio Berlin Int'l: Commentary. See S 0112.
 0120 Radio Japan: Radio Japan Journal. See W 0520.
 0122 Radio Berlin Int'l: Sounds Around. See H 0007.
 0125 BBC: Financial News. See M 2310.
 0126 Radio Japan (North America): Tokyo Pop-In. See M 0556.
 0129 Radio Berlin Int'l: Viewpoint. See H 0014.



One program dropped after the attack on HCJB is "Passport," hosted by Mark Irwin. See "Bulletin Board" for details.

1130 Radio Berlin Int'l: News
 1130 Radio Moscow (World Service): News In Brief
 1130 Radio Netherlands: News [M-A]
 1152 Radio RSA: News In Brief
 1155 KUSW: News [S]
 1200 BBC: News Summary [S]; Newsreel [M-A]
 1200 Christian Science Monitor: News [M-F]
 1200 Radio Australia: International Report
 1200 Radio Beijing: News
 1200 Radio Bucharest: News
 1200 Radio Canada Int'l: News
 1200 Radio Finland: Northern Report [T-F]
 1200 Radio Jordan: News Summary
 1200 Radio Moscow (World Service): News
 1200 Radio New Zealand Int'l: News
 1200 Radio Polonia: News
 1200 Radio RSA: News
 1200 Radio Tashkent: News
 1200 Radio Yugoslavia: News
 1200 Swiss Radio Int'l: News
 1200 Voice of America: News
 1210 Radio Beijing: News About China
 1215 Radio Berlin Int'l: News
 1230 BRT, Brussels: News [M-S]
 1230 Christian Science Monitor: News
 1230 Radio France Int'l: News

1230 Radio Moscow (World Service): News In Brief
 1230 Radio Polonia: News
 1230 Trans World Radio, Bonaire: News [M-A]
 1230 Voice of Turkey: News
 1245 Radio Berlin Int'l: Twenty-Four Hours on Sunday [S]; World News [M-A]
 1300 Belize Radio One: News
 1300 Christian Science Monitor: News
 1300 Christian Science Monitor: News [M-F]
 1300 Radio Australia: World and Australian News
 1300 Radio Berlin Int'l: News
 1300 Radio Bucharest: News
 1300 Radio Canada Int'l: World Report [M-F]
 1300 Radio Finland: Northern Report [T-A]
 1300 Radio Korea: News
 1300 Radio Moscow (World Service): News
 1300 Radio Peace and Progress: News
 1300 Radio RSA: News
 1300 Radio Tanzania: News [A-S]
 1300 Radio Tirana, Albania: News
 1300 Trans World Radio, Bonaire: News [S]
 1300 Voice of America: News
 1300 WWCR: USA Radio News [M-F]
 1305 Radio Pyongyang: News
 1330 Christian Science Monitor: News [M-F]

1330 Radio Moscow (World Service): News In Brief
 1330 Radio Tashkent: News
 1330 Swiss Radio Int'l: News
 1330 UAE Radio, Dubai: News
 1330 Voice of America: News (Special English)
 1345 Radio Berlin Int'l: News
 1352 Radio RSA: News In Brief
 1400 BBC: News Summary [A-S]; 5-Minute News [M-F]
 1400 Christian Science Monitor: News
 1400 Radio Australia: International Report
 1400 Radio Beijing: News
 1400 Radio Canada Int'l: News [S]
 1400 Radio France Int'l: News
 1400 Radio Japan: News
 1400 Radio Jordan: News Summary
 1400 Radio Moscow (World Service): News
 1400 Radio RSA: News
 1400 Voice of America: News
 1400 WWCR: USA Radio News [M-F]
 1405 Radio Finland: Northern Report [T-A]
 1405 Radio Pyongyang: News
 1410 Radio Beijing: News About China
 1430 Christian Science Monitor: News [M-F]
 1430 Radio Moscow (World Service): News In Brief
 1430 Radio Netherlands: News [M-A]
 1430 Radio Polonia: News

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0130 BBC: Waveguide. See S 0750.
 0136 Radio Japan: Asian Crossroads. See W 0536.
 0140 BBC: Book Choice. See S 0745.
 0145 BBC: Society Today. A weekly look at the changes in Britain.
 0151 Radio Japan: Commentary. See S 0515.
 0155 Radio Berlin Int'l: Musical Interlude. See S 0110.
 0156 Radio Japan: Tokyo Pop-In. See M 0556.
 0157 Radio Berlin Int'l: Our Report. See T 0001.
 0201 Radio Berlin Int'l: Commentary. See S 0112.
 0207 Radio Berlin Int'l: Sounds Around. See H 0007.
 0209 BBC: British Press Review. See S 0209.
 0214 Radio Berlin Int'l: Viewpoint. See H 0014.
 0215 BBC: Network UK. See T 0215.
 0230 BBC: Assignment. Examinations of current topical issues.
 0235 HCJB: News Feature. See M 0735.
 0255 HCJB: Ham Radio Today. See W 0755.
 0310 Radio Berlin Int'l: Musical Interlude. See S 0110.
 0312 Radio Berlin Int'l: Our Report. See T 0001.
 0315 BBC: The World Today. See M 1645.
 0315 Radio Japan: Commentary. See S 0515.
 0316 Radio Berlin Int'l: Commentary. See S 0112.
 0320 Radio Japan: Radio Japan Journal. See W 0520.
 0322 Radio Berlin Int'l: Sounds Around. See H 0007.
 0326 Radio Japan (Americas): Tokyo Pop-In. See M 0556.
 0329 Radio Berlin Int'l: Viewpoint. See H 0014.
 0330 BBC: Round Britain Quiz. See M 1215.
 0336 Radio Japan: Asian Crossroads. See W 0536.
 0351 Radio Japan: Commentary. See S 0515.
 0355 Radio Berlin Int'l: Musical Interlude. See S 0110.
 0356 Radio Japan: Tokyo Pop-In. See M 0556.
 0357 Radio Berlin Int'l: Our Report. See T 0001.
 0401 Radio Berlin Int'l: Commentary. See S 0112.
 0407 Radio Berlin Int'l: Sounds Around. See H 0007.
 0414 Radio Berlin Int'l: Viewpoint. See H 0014.
 0430 BBC: Off the Shelf. See M 0430.
 0445 BBC: Andy Kershaw's World of Music. See M 0215.
 0505 HCJB: News Feature. See M 0735.
 0509 BBC: Twenty-Four Hours. See S 0509.
 0515 Radio Japan: Commentary. See S 0515.
 0520 Radio Japan: Business and Science. Information on Japan's economy and developments in science and technology.
 0525 HCJB: Ham Radio Today. See W 0755.
 0530 BBC: Financial News. See M 2310.
 0540 BBC: Words of Faith. See S 0540.

0545 BBC: The World Today. See M 1645.
 0551 Radio Japan: Commentary. See S 0515.
 0556 Radio Japan: Tokyo Pop-In. See M 0556.
 0630 BBC: Goldmine in the Dustbin. See W 1215.
 0640 BBC: The Farming World. See W 1225.
 0709 BBC: Twenty-Four Hours. See S 0509.
 0715 Radio Japan: Commentary. See S 0515.
 0720 Radio Japan: Business and Science. See H 0520.
 0730 BBC: Mediawatch. Keith Hindell looks at developments in the media worldwide.
 0735 HCJB: News Feature. See M 0735.

look at folk or jazz music on the British Isles.
 1405 BBC: Outlook. See M 1405.
 1415 Radio Japan: Commentary. See S 0515.
 1420 Radio Japan: Business and Science. See H 0520.
 1430 BBC: Off the Shelf. See M 0430.
 1445 BBC: Mediawatch. See H 0730.
 1451 Radio Japan: Commentary. See S 0515.
 1456 Radio Japan: Tokyo Pop-In. See M 0556.
 1515 BBC: The Pleasure's Yours. Gordon Clyde presents classical music requests.
 1515 Radio Japan: Commentary. See S 0515.



Members of the BBC World Service's drama unit. The group produces "Play of the Week" and other radio drama.

0745 BBC: Network UK. See T 0215.
 0751 Radio Japan: Commentary. See S 0515.
 0755 HCJB: Happiness Is. See T 0755.
 0756 Radio Japan: Tokyo Pop-In. See M 0556.
 1115 BBC: New Ideas. See T 0445.
 1115 Radio Japan: Commentary. See S 0515.
 1120 Radio Japan: Business and Science. See H 0520.
 1125 BBC: Book Choice. See S 0745.
 1130 BBC: The Sittaford Mystery. A serial version of Agatha Christie's mystery tale (except May 3rd, 10th: The Lion, the Witch, and the Wardrobe, a children's tale by C.S. Lewis).
 1151 Radio Japan: Commentary. See S 0515.
 1156 Radio Japan: Tokyo Pop-In. See M 0556.
 1215 BBC: Multitrack 2. See W 1830.
 1245 BBC: Sports Roundup. See S 1330.
 1309 BBC: Twenty-Four Hours. See S 0509.
 1330 BBC: Network UK. See T 0215.
 1345 BBC: Folk in Britain or Jazz Scene UK. A

1520 Radio Japan: Business and Science. See H 0520.
 1551 Radio Japan: Commentary. See S 0515.
 1556 Radio Japan: Tokyo Pop-In. See M 0556.
 1615 BBC: Assignment. See H 0230.
 1645 BBC: The World Today. See M 1645.
 2305 BBC: Commentary. See M 2305.
 2310 BBC: Financial News. See M 2310.
 2315 BBC: Music Review. Classical music events and developments from around the world.
 2315 Radio Japan: Commentary. See S 0515.
 2320 Radio Japan: Business and Science. See H 0520.
 2351 Radio Japan: Commentary. See S 0515.
 2355 Radio Berlin Int'l: Musical Interlude. See S 0110.
 2356 Radio Japan: Tokyo Pop-In. See M 0556.
 2357 Radio Berlin Int'l: Our Report. See T 0001.

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1430 Radio Prague: News
 1445 Radio Berlin Int'l: News
 1500 BBC: Newsreel
 1500 Belize Radio One: News [M-A]
 1500 Christian Science Monitor: News
 1500 Deutsche Welle: World News
 1500 Radio Australia: World and Australian News
 1500 Radio Beijing: News
 1500 Radio Bucharest: News
 1500 Radio Japan: News
 1500 Radio Korea: News
 1500 Radio Moscow (World Service): News
 1500 Voice of America: News
 1500 WHRI: News [M-A]
 1500 WWC: USA Radio News
 1505 Radio Pyongyang: News
 1510 Radio Beijing: News About China
 1530 BRT, Brussels: News [M-S]
 1530 Christian Science Monitor: News [M-F]
 1530 Deutsche Welle: African News [M-F]
 1530 Radio Moscow (World Service): News in Brief
 1530 Radio Peace and Progress: News
 1530 Radio Prague: News
 1530 Radio Tirana, Albania: News

1530 Swiss Radio Int'l: News
 1545 Radio Berlin Int'l: News
 1545 Radio Canada Int'l: News
 1600 BBC: World News
 1600 Christian Science Monitor: News
 1600 Deutsche Welle: World News
 1600 Radio Australia: International Report
 1600 Radio France Int'l: News
 1600 Radio Jordan: News Summary
 1600 Radio Moscow (World Service): News
 1600 Radio Polonia: News
 1600 Radio Portugal: News [M-F]
 1600 Radio Tanzania: News
 1600 Voice of America: News
 1600 WWC: USA Radio News [M-F]
 1609 BBC: News About Britain
 1630 Christian Science Monitor: News [M-F]
 1630 Radio Moscow (World Service): News in Brief
 1630 Radio Netherlands: News [M-A]
 1630 Radio Polonia: News
 1630 RAE, Buenos Aires: News
 1630 UAE Radio, Dubai: News
 1630 Voice of America (exc Africa): News (English)
 1655 KUSW: News [M-F]
 1700 BBC: World News [S-F]; News Summary [A]
 1700 Belize Radio One: News [M-F]

1700 Christian Science Monitor: News
 1700 Koi Israel: News
 1700 Radio Australia: World and Australian News
 1700 Radio Japan: News
 1700 Radio Jordan: Newsdesk [S-T]
 1700 Radio Korea: News
 1700 Radio Moscow (World Service): News
 1700 Voice of America: News
 1705 Radio Pyongyang: News
 1715 Radio Berlin Int'l: News
 1715 Radio Canada Int'l: News
 1730 BRT, Brussels: News
 1730 Christian Science Monitor: News [M-F]
 1730 Radio Bucharest: News
 1730 Radio Moscow (World Service): News in Brief
 1730 Radio Prague: News
 1730 Swiss Radio Int'l: News
 1755 KUSW: News [M-A]
 1800 BBC: Newsdesk
 1800 Belize Radio One: Headline News [M-A]
 1800 Christian Science Monitor: News
 1800 Radio Australia: International Report
 1800 Radio Bras, Brasilia: News
 1800 Radio Canada Int'l: News
 1800 Radio Kiev: News
 1800 Radio Moscow (World Service): News

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Friday

May 4th, 11th, 18th, 25th

0001 Radio Berlin Int'l: Commentary. See S 0112.
 0007 Radio Berlin Int'l: Mid-Week Sports Report. Updates of the week's national and International sporting results.
 0019 Radio Berlin Int'l: Out and About. People and ways of life in East Germany.
 0030 BBC: Tchaikovsky. The life of the great Russian composer.
 0035 HCJB: News Feature. See M 0735.
 0055 HCJB: Happiness Is. See T 0755.
 0101 BBC: Outlook. See M 1405.
 0110 Radio Berlin Int'l: Musical Interlude. See S 0110.
 0112 Radio Berlin Int'l: Our Report. See T 0001.
 0115 Radio Japan: Commentary. See S 0515.
 0116 Radio Berlin Int'l: Commentary. See S 0112.
 0120 Radio Japan: Business and Science. See H 0520.
 0122 Radio Berlin Int'l: Mid-Week Sports Report. See F 0007.
 0125 BBC: Financial News. See M 2310.
 0126 Radio Japan (North America): Tokyo Pop-In. See M 0556.
 0130 BBC: Folk in Britain or Jazz Scene UK. See H 1345.
 0134 Radio Berlin Int'l: Out and About. See F 0019.
 0145 BBC: Global Concerns. Issues of an environmental nature.
 0151 Radio Japan: Commentary. See S 0515.
 0155 Radio Berlin Int'l: Musical Interlude. See S 0110.
 0156 Radio Japan: Tokyo Pop-In. See M 0556.
 0157 Radio Berlin Int'l: Our Report. See T 0001.
 0201 Radio Berlin Int'l: Commentary. See S 0112.
 0207 Radio Berlin Int'l: Mid-Week Sports Report. See F 0007.
 0209 BBC: British Press Review. See S 0209.
 0215 BBC: Seven Seas. A weekly program about ships and the sea.
 0219 Radio Berlin Int'l: Out and About. See F 0019.
 0230 BBC: The Sittaford Mystery (except May 4th, 11th: The Lion, the Witch, and the Wardrobe). See H 1130.
 0235 HCJB: News Feature. See M 0735.
 0255 HCJB: Happiness Is. See T 0755.
 0310 Radio Berlin Int'l: Musical Interlude. See S 0110.
 0312 Radio Berlin Int'l: Our Report. See T 0001.
 0315 BBC: The World Today. See M 1645.



John Beck, producer/host of "Ham Radio Today" on HCJB.

0315 Radio Japan: Commentary. See S 0515.
 0316 Radio Berlin Int'l: Commentary. See S 0112.
 0320 Radio Japan: Business and Science. See H 0520.
 0322 Radio Berlin Int'l: Mid-Week Sports Report. See F 0007.
 0326 Radio Japan (Americas): Tokyo Pop-In. See M 0556.
 0330 BBC: Focus on Faith. Comment and discussion on the major issues in the worlds of faith.
 0334 Radio Berlin Int'l: Out and About. See F 0019.
 0351 Radio Japan: Commentary. See S 0515.
 0355 Radio Berlin Int'l: Musical Interlude. See S 0110.
 0356 Radio Japan: Tokyo Pop-In. See M 0556.
 0357 Radio Berlin Int'l: Our Report. See T 0001.
 0401 Radio Berlin Int'l: Commentary. See S 0112.
 0407 Radio Berlin Int'l: Mid-Week Sports Report. See F 0007.
 0419 Radio Berlin Int'l: Out and About. See F 0019.
 0430 BBC: Off the Shelf. See M 0430.
 0445 BBC: Folk in Britain or Jazz Scene UK. See H 1345.
 0505 HCJB: News Feature. See M 0735.
 0509 BBC: Twenty-Four Hours. See S 0509.
 0515 Radio Japan: Commentary. See S 0515.
 0520 Radio Japan: Japan Panorama. Culture, traditions, and lifestyles of the Japanese people.

0525 HCJB: Happiness Is. See T 0755.
 0530 BBC: Financial News. See T 0125.
 0540 BBC: Words of Faith. See S 0540.
 0545 BBC: The World Today. See M 1645.
 0551 Radio Japan: Commentary. See S 0515.
 0556 Radio Japan: Tokyo Pop-In. See M 0556.
 0600 HCJB: Music in the Night. See M 0600.
 0630 BBC: Meridian. See W 0630.
 0709 BBC: Twenty-Four Hours. See S 0509.
 0715 Radio Japan: Commentary. See S 0515.
 0720 Radio Japan: Japan Panorama. See F 0520.
 0730 BBC: Feature. This month: "Living With Death" (May 4th), "Playing God" (a rerun, May 11th/18th), and "Preservation or Progress?" (May 25th).
 0735 HCJB: News Feature. See M 0735.
 0751 Radio Japan: Commentary. See S 0515.
 0755 HCJB: Musica del Ecuador. A mix of Ecuadorian and Latin music, hosted by Jorge Zambrano.
 0756 Radio Japan: Tokyo Pop-In. See M 0556.
 1115 BBC: Global Concerns. See F 0145.
 1115 Radio Japan: Commentary. See S 0515.
 1120 Radio Japan: Japan Panorama. See F 0520.
 1130 BBC: Meridian. See W 0630.
 1151 Radio Japan: Commentary. See S 0515.
 1156 Radio Japan: Tokyo Pop-In. See M 0556.
 1215 BBC: Feature. See F 0730.
 1245 BBC: Sports Roundup. See S 1330.
 1309 BBC: Twenty-Four Hours. See S 0509.
 1330 BBC: Short Story. See T 0130.
 1345 BBC: Here's Humph! All that jazz with Humphrey Lyttelton.
 1405 BBC: Outlook. See M 1405.
 1415 Radio Japan: Commentary. See S 0515.
 1420 Radio Japan: Japan Panorama. See F 0520.
 1430 BBC: Off the Shelf. See M 0430.
 1445 BBC: Tech Talk. See M 0445.
 1451 Radio Japan: Commentary. See S 0515.
 1456 Radio Japan: Tokyo Pop-In. See M 0556.
 1515 BBC: Music Review. See H 2315.
 1515 Radio Japan: Commentary. See S 0515.
 1520 Radio Japan: Japan Panorama. See F 0520.
 1551 Radio Japan: Commentary. See S 0515.
 1556 Radio Japan: Tokyo Pop-In. See M 0556.
 1615 BBC: Science In Action. See M 0230.
 1645 BBC: The World Today. See M 1645.
 2305 BBC: Commentary. See M 2305.
 2310 BBC: Financial News. See M 2310.
 2315 BBC: Worldbrief. A roundup of the week's news headlines and human-interest happenings.
 2315 Radio Japan: Commentary. See S 0515.
 2320 Radio Japan: Japan Panorama. See F 0520.
 2330 BBC: Multitrack 3. Sarah Ward surveys the British contemporary music scene.

1800 Radio RSA: News
 1800 Radio Tanzania: News
 1800 Voice of America: News
 1800 WWCR: USA Radio News [A]
 1803 Radio Jamahiriya, Libya: News Headlines
 1830 Belize Radio One: Network News
 1830 Christian Science Monitor: News [M-F]
 1830 Radio Berlin Int'l: News
 1830 Radio Budapest: News
 1830 Radio Finland: Northern Report [M-F]
 1830 Radio Kuwait: News
 1830 Radio Moscow (World Service): News In Brief
 1830 Radio Netherlands: News [M-A]
 1830 Radio Polonia: News
 1830 Radio Tirana, Albania: News
 1830 Radio Yugoslavia: News
 1830 Swiss Radio Int'l: News
 1830 Voice of America: News (Special English)
 1847 Radio Jamahiriya, Libya: News
 1852 Radio RSA: News In Brief
 1855 KUSW: News [M-F]
 1900 BBC: News Summary
 1900 Christian Science Monitor: News
 1900 Deutsche Welle: World News
 1900 HCJB: Latin American News
 1900 Kol Israel: News

1900 Radio Australia: World and Australian News
 1900 Radio Canada Int'l: News [M-F]
 1900 Radio Havana Cuba: International News [M-A]
 1900 Radio Japan: News
 1900 Radio Jordan: News Summary
 1900 Radio Moscow (World Service): News
 1900 Radio New Zealand Int'l: News
 1900 Radio Portugal: News [M-F]
 1900 Radio RSA: News
 1900 Radio Tanzanila: News
 1900 Spanish National Radio: News
 1900 Voice of America: News
 1900 WWCR: USA Radio News [M-F]
 1915 Radio Berlin Int'l: News
 1930 Christian Science Monitor: News [M-F]
 1930 Deutsche Welle: African News [M-F]
 1930 Radio Bucharest: News
 1930 Radio Canada Int'l: News [M-F]
 1930 Radio Havana Cuba: Cuban Nat'l News [M-T]; Newsbreak [W-A]
 1930 Radio Korea: News
 1930 Radio Moscow (World Service): News In Brief
 1935 Radiotelevisione Italiana: News
 1945 Radio Berlin Int'l: News
 1955 HCJB: World News
 1955 KUSW: News [M-A]

2000 BBC: World News
 2000 Christian Science Monitor: News
 2000 KVOH: UPI News [S]
 2000 Radio Australia: International Report
 2000 Radio Havana Cuba: International News [M-A]
 2000 Radio Jordan: News Summary
 2000 Radio Moscow (World Service): News
 2000 Radio New Zealand Int'l: News
 2000 Radio Peace and Progress: News
 2000 Radio Polonia: News
 2000 Voice of America: News
 2000 Voice of Indonesia: News
 2000 Voice of Turkey: News
 2005 Radio Pyongyang: News
 2025 Radio Havana Cuba: Cuban Nat'l News [M-A]
 2025 Radiotelevisione Italiana: News
 2030 Christian Science Monitor: News [M-F]
 2030 Radio Budapest: News
 2030 Radio Havana Cuba: News [M-A]
 2030 Radio Moscow (World Service): News In Brief
 2030 Radio Netherlands: News [M-A]
 2055 KUSW: News [M-A]
 2055 Voice of Indonesia: News In Brief
 2100 BBC: News Summary
 2100 Belize Radio One: News [M-F]
 2100 BRT, Brussels: News

program

guide

2351 Radio Japan: Commentary. See S 0515.
 2355 Radio Berlin Int'l: Musical Interlude. See S 0110.
 2356 Radio Japan: Tokyo Pop-In. See M 0556.
 2357 Radio Berlin Int'l: Commentary. See S 0112.

Saturday

May 5th, 12th, 19th, 26th

0001 Radio Berlin Int'l: Our Report. See T 0001.
 0007 Radio Berlin Int'l: Berlin In Focus or GDR-teries. Life and events in East Germany or international relations, all punning aside.
 0030 BBC: From the Weeklies. A review of the weekly British press.
 0035 HCJB: News Feature. See M 0735.
 0045 BBC: Recording of the Week. See M 0545.
 0055 HCJB: Musica del Ecuador. See F 0755.
 0101 BBC: Outlook. See M 1405.
 0110 Radio Berlin Int'l: Musical Interlude. See S 0110.
 0112 Radio Berlin Int'l: Commentary. See S 0112.
 0115 Radio Japan: Commentary. See S 0515.
 0116 Radio Berlin Int'l: Our Report. See T 0001.
 0120 Radio Japan: Japan Panorama. See F 0520.
 0122 Radio Berlin Int'l: Berlin In Focus or GDR-teries. See A 0007.
 0125 BBC: Financial News. See M 2310.
 0126 Radio Japan (North America): Tokyo Pop-In. See M 0556.
 0130 BBC: The Dancing Fiddles. Scottish and Irish



"DX Partyline" host Brent Allred was featured on this QSL card sent by Alfred Fossum of Massachusetts.

news guide cont'd from p.63

2100 Christian Science Monitor: News
 2100 Deutsche Welle: World News
 2100 KVOH: UPI News
 2100 Radio Australia: World and Australian News
 2100 Radio Berlin Int'l: News
 2100 Radio Bucharest: News
 2100 Radio Finland: Northern Report [M-F]
 2100 Radio Japan: News
 2100 Radio Jordan: News Summary
 2100 Radio Moscow (World Service): News
 2100 Radio New Zealand Int'l: News
 2100 Radio Yugoslavia: News
 2100 RAE, Buenos Aires: News
 2100 Spanish National Radio: News
 2100 Swiss Radio Int'l: News
 2100 Voice of America: News
 2130 Christian Science Monitor: News [M-F]
 2130 Kol Israel: News
 2130 KVOH: UPI Headlines [M-H]
 2130 Radio Canada Int'l: News
 2130 Radio Moscow (World Service): News in Brief
 2130 Swiss Radio Int'l: News
 2145 Radio Berlin Int'l: News
 2155 KUSW: News [M-F]

tunes, as recorded live earlier this year.
 0145 BBC: Book Choice. See S 0745.
 0150 BBC: New Ideas. See T 0445.
 0151 Radio Japan: Commentary. See S 0515.
 0155 Radio Berlin Int'l: Musical Interlude. See S 0110.
 0156 Radio Japan: Tokyo Pop-In. See M 0556.
 0157 Radio Berlin Int'l: Commentary. See S 0112.
 0201 Radio Berlin Int'l: Our Report. See T 0001.
 0207 Radio Berlin Int'l: Berlin In Focus or GDR-teries. See A 0007.
 0209 BBC: British Press Review. See S 0209.
 0215 BBC: Network UK. See T 0215.
 0230 BBC: People and Politics. Background to the British political scene.
 0235 HCJB: News Feature. See M 0735.
 0255 HCJB: Musica del Ecuador. See F 0755.
 0310 Radio Berlin Int'l: Musical Interlude. See S 0110.
 0312 Radio Berlin Int'l: Commentary. See S 0112.
 0315 BBC: The World Today. See M 1645.
 0315 Radio Japan: Commentary. See S 0515.
 0316 Radio Berlin Int'l: Our Report. See T 0001.
 0320 Radio Japan: Japan Panorama. See F 0520.
 0322 Radio Berlin Int'l: Berlin In Focus or GDR-teries. See A 0007.
 0326 Radio Japan (Americas): Tokyo Pop-In. See M 0556.
 0330 BBC: The Vintage Chart Show. Paul Burnett presents top ten hits from the music charts of yesteryear.
 0351 Radio Japan: Commentary. See S 0515.

SUGGESTIONS? SOMETHING MISSING?

Let us know your corrections, additions, and suggestions of what you'd like to see to Program Manager Kannon Shanmugam at 4412 Turnberry Circle, Lawrence, Kansas 66047.

0355 Radio Berlin Int'l: Musical Interlude. See S 0110.
 0356 Radio Japan: Tokyo Pop-In. See M 0556.
 0357 Radio Berlin Int'l: Commentary. See S 0112.
 0401 Radio Berlin Int'l: Our Report. See T 0001.
 0407 Radio Berlin Int'l: Berlin In Focus or GDR-teries. See A 0007.
 0430 BBC: Here's Humph! See F 1345.
 0445 BBC: Worldbrief. See F 2315.
 0505 HCJB: News Feature. See M 0735.
 0509 BBC: Twenty-Four Hours. See S 0509.
 0515 Radio Japan: This Week. See S 0115.
 0525 HCJB: Musica del Ecuador. See F 0755.
 0530 BBC: Financial News. See M 2310.
 0540 BBC: Words of Faith. See S 0540.
 0545 BBC: The World Today. See M 1645.
 0630 BBC: Meridian. See W 0630.
 0700 HCJB: Musical Mailbag. A musical look at listener letters.
 0709 BBC: Twenty-Four Hours. See S 0509.
 0715 Radio Japan: This Week. See S 0115.
 0730 BBC: From the Weeklies. See F 2315.
 0735 HCJB: Focus 2000. See S 0035.
 0745 BBC: Network UK. See T 0215.
 0755 HCJB: DX Partyline. See S 0055.
 1115 BBC: The Dancing Fiddles. See A 0130.
 1115 Radio Japan: This Week. See S 0115.
 1130 BBC: Meridian. See W 0630.
 1215 BBC: Mullittrack 3. See F 2330.
 1245 BBC: Sports Roundup. See S 1330.
 1309 BBC: Twenty-Four Hours. See S 0509.
 1330 BBC: Network UK. See T 0215.
 1345 BBC: Sportsworld. A weekly sports magazine (with breaks for news, through 1700 UTC).
 1415 Radio Japan: This Week. See S 0115.
 1515 Radio Japan: This Week. See S 0115.
 2305 BBC: Words of Faith. See S 0540.
 2310 BBC: Book Choice. See S 0745.
 2315 BBC: A Jolly Good Show. See T 1515.
 2315 Radio Japan: This Week. See S 0115.
 2355 Radio Berlin Int'l: Musical Interlude. See S 0110.
 2357 Radio Berlin Int'l: Commentary. See S 0112.

2200 BBC: Newshour
 2200 Christian Science Monitor: News
 2200 KVOH: UPI News
 2200 Radio Australia: International Report
 2200 Radio Canada Int'l (Asia): News
 2200 Radio Canada Int'l (Western Europe): News [A-S]; The World at Six [M-F]
 2200 Radio Havana Cuba: International News [M-A]
 2200 Radio Moscow: News
 2200 Radiotelevisione Italiana: News
 2200 Voice of America: News
 2200 Voice of Free China: News and Commentary
 2200 Voice of Turkey: News
 2230 Christian Science Monitor: News [M-F]
 2230 KVOH: UPI Headlines [M-H]
 2230 Radio Havana Cuba: Cuban Nat'l News [M-A]
 2230 Radio Korea: News
 2230 Radio Moscow (World Service): News in Brief
 2230 Radio Polonia: News
 2230 Radio Tirana, Albania: News
 2230 Voice of America: News (Special English)
 2233 Radio Jamahiriya, Libya: News Headlines
 2255 KUSW: News [M-A]
 2300 BBC: World News [A-S]; 5-Minute News [M-F]
 2300 Belize Radio One: News [M-F]
 2300 Christian Science Monitor: News

2300 Kol Israel: News
 2300 KVOH: UPI News
 2300 Radio Australia: World and Australian News
 2300 Radio Canada Int'l: News
 2300 Radio Finland: Northern Report [T-A]
 2300 Radio for Peace Int'l: News [F]
 2300 Radio Japan: News
 2300 Radio Moscow: News
 2300 Voice of America: News
 2305 Radio Polonia: News
 2305 Radio Pyongyang: News
 2330 BRT, Brussels: News
 2330 Christian Science Monitor: News [M-F]
 2330 KVOH: UPI Headlines [A]
 2330 Radio Budapest: News
 2330 Radio for Peace Int'l: News [M]
 2330 Radio Jamahiriya, Libya: News
 2330 Radio Kiev: News
 2330 Radio Moscow (World Service): News in Brief
 2330 Radio Tirana, Albania: News
 2335 Voice of Greece: News [S]
 2345 Radio Berlin Int'l: News
 2355 KUSW: News [M-A]
 2355 WRNO: ABC News [F]

MT Monitoring Team

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Frequency Manager
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Winston-Salem NC 27106-2846

Richard A. Keen
Colorado

Colin Miller
Ontario, Canada

Larry Miller
Pennsylvania

frequency

section

0000 UTC [8:00 PM EDT/5:00 PM PDT]

0000-0030	M	Radio Norway International, Oslo	15225
0000-0030	BBC World Service, London, England	5965	5975 6005 6175
		6195	7145 7325 9580
		9590	9915 11750 11945
		11955	15260 15360 17875
		17830	12095
0000-0030	Kol Israel, Jerusalem	15640	9435 11605
0000-0030	Radio Berlin International, GDR	13690	11890 6080
0000-0030	Radio Korea, Seoul	15575	
0000-0030	T-A Radio Canada International, Montreal	5960	9755 11905
0000-0045	Radio Yugoslavia, Belgrade	6005	7215 11735
0000-0050	Radio Pyongyang, North Korea	15115	15160
0000-0100	SLBC Domestic Service, Sri Lanka	4940	
0000-0100	Radio New Zealand, Wellington	17680	
0000-0100	Adventist World Radio, Costa Rica	9725	11870
0000-0100	Radio Moscow N.American Service	11850	11750 11735 11950
0000-0100	Radio Moscow World Service	21690	21790
0000-0100	Adventist World Radio-Asia, Guam	15125	15225
0000-0100	All India Radio, New Delhi	9535	9910
0000-0100	CBC Northern Quebec Service, Can	11715	11745 15110
0000-0100	CBN, St. John's, Nfld, Canada	9625	(ML)
0000-0100	CBU, Vancouver, British Columbia	6160	
0000-0100	CFCF, Montreal, Quebec, Canada	6160	
0000-0100	CFCN, Calgary, Alberta, Canada	6005	
0000-0100	CHNS, Halifax, Nova Scotia, Canada	6030	
0000-0100	Christian Science World Svc, Boston	6130	
0000-0100	CKWX, Vancouver, British Columbia	9410	9850 13760 15435
0000-0100	CFRB, Toronto, Ontario, Canada	6080	
0000-0100	CFRB, Toronto, Ontario, Canada	6070	

LEGEND

- * The first four digits of an entry are the broadcast start time in UTC. The second four digits represent the end time.
- * In the space between the end time and the station name is the broadcast schedule.

S = Sunday M = Monday T = Tuesday W = Wednesday
 H = Thursday F = Friday A = Saturday

If there is no entry, the broadcasts are heard daily. If, for example, there is an entry of "M," the broadcast would be heard only on Mondays. An entry of "M,W,F" would mean Mondays, Wednesdays and Fridays only. "M-F" would mean Mondays through Fridays. "TEN" indicates a tentative schedule and "TES" a test transmission.

The last entry on a line is the frequency. Several codes may be found after a frequency as follows:

- * SSB Indicates Single Sideband transmission.
- * v after a frequency Indicates that it varies
- * Notations of USB and LSB (upper and lower sideband transmissions) usually refer only to the individual frequency after which they appear.
- * [ML] after a frequency Indicates a multi-lingual transmission containing English-language programs. All other frequencies may be assumed to be English language programs directed to various parts of the world.
- * Listings followed by an asterisk (*) are for English lessons and do not contain regularly scheduled programming.

We suggest that you begin with the lower frequencies that a station is broadcasting on and work your way up the dial. Remember that there is no guarantee that a station will be audible on any given day. Reception conditions can change rapidly, though, and if it is not audible one night, it may well be on another.

0000-0100	FEBC Radio Int'l, Philippines	15480
0000-0100	KUSW, Salt Lake City, Utah	15580
0000-0100	Radio Australia, Melbourne	15160 15240 15320 17630
		17750 17795 21740
0000-0100	Radio Beijing, Beijing, China	17705 15105 17855
0000-0100	Radio Havana Cuba	11820
0000-0100	Radio Luxembourg, Junglinster	6090
0000-0100	Radio Tonga, Kingdom of Tonga	5030v
0000-0100	Spanish National Radio, Madrid	9630 11880
0000-0100	Voice of America-Americas Service	5995 9775 9815 11580
		11740 15205
0000-0100	Voice of America-Caribbean Service	6130 9455 11695
0000-0100	Voice of America-East Asia Service	7120 9770 11760 15185
		15290 17735 17820
0000-0100	Radio for Peace Int'l, Costa Rica	7375 (+13660 21566 T-A)
0000-0100	WHRI, Noblesville, Indiana	7315 9495
0000-0100	WINB, Red Lion, Pennsylvania	15145
0000-0100	WRNO Worldwide, Louisiana	7355
0000-0100	WWCR, Nashville, Tennessee	15690
0000-0100	WYFR, Okeechobee, Florida	5985 13696 15170
0004-0015	S Radio Nacional, Venezuela	5020 9540 11695 11850
0030-0035	Radio Prague, Czechoslovakia	6055 13715
0030-0045	BBC English by Radio, London, Eng	6195 7145 11945 15280
		17875
0030-0100	BBC World Service, London, England	5965 5975 6005 6175
		7325 9580 9590 9915
		11750 11955 15260 15360
		12095
0030-0100	HCJB, Quito, Ecuador (alt. prog.)	7310 9685 12050 17700
0030-0100	Radio Netherlands Int'l, Hilversum	15230
0035-0100	HCJB, Quito, Ecuador	6020 6165 11740
0050-0100	Vatican Radio, Vatican City	9745 11795 15155
		6150 9605 11780

0100 UTC [9:00 PM EDT/6:00 PM PDT]

0100-0105	Vatican Radio, Vatican City	6150 9605 11780
0100-0115	All India Radio, New Delhi	9535 9910
		11715 11745 15110
0100-0125	RAI, Rome, Italy	9575 11800
0100-0125	Radio Netherlands Int'l, Hilversum	6020 6165 11740
0100-0130	Radio Japan Americas Svc, Tokyo	17755
0100-0130	CBC Northern Quebec Service, Can	9625 (ML)
0100-0130	HCJB, Quito, Ecuador (alt. prog.)	15230

HOW TO USE THE PROPAGATION CHARTS

Propagation charts can be an invaluable aid to the DXer in determining which frequencies are likely to be open at a given time. To use the propagation charts, choose those for your location (they are divided into east coast, midwest and west coast of North America). Then look for the one most closely describing the geographic location of the station you want to hear.

Once you've located the correct charts, look along the horizontal axis of the graph for the time that you are listening. The top line of the graph shows the Maximum Useable Frequency [MUF] and the lower line the Lowest Useable Frequency [LUF] as indicated on the vertical axis of the graph.

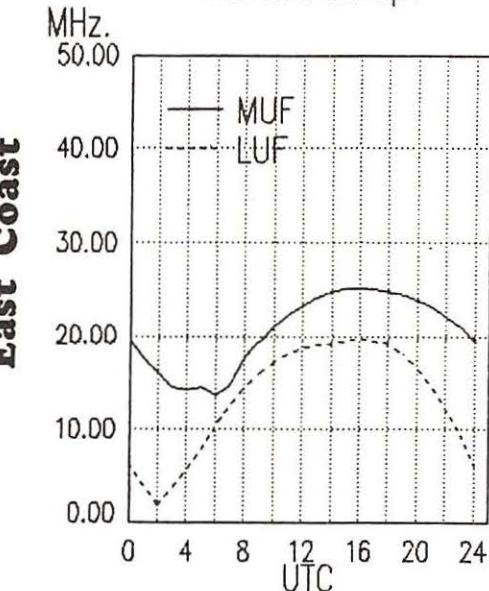
While there are exceptions to every rule (especially those regarding shortwave listening), you should find the charts helpful in determining the best times to listen for particular regions of the world. Good luck!

frequency

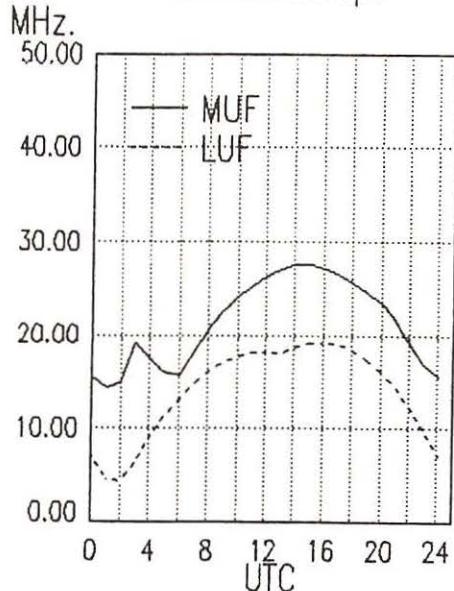
section

0100-0130	Lao National Radio, Vientiane	7116v	0100-0200	Radio for Peace Int'l, Costa Rica	7375 (+13660 21566 T-A)
0100-0130	Radio Sweden, Stockholm	7225 9640	0100-0200	Radio Tonga, Kingdom of Tonga	5030v
0100-0130	Kol Israel, Jerusalem	9435 15640 11605	0100-0200	Spanish National Radio, Madrid	9630 11880
0100-0130	Radio Budapest, Hungary	6110 9520 9835 11910	0100-0200	Voice of America-Americas Service	5995 9775 9815 11580
		15160			15205
0100-0145	BBC World Service, London, England	5965 5975 6005 6175	0100-0200	Voice of America-Caribbean Service	6130 9455
		7135 7325 9580 9590	0100-0200	Voice of America-East Asia Service	7115 7205 9740 11705
		9915 11750 11955 15260	0100-0200	Voice of Indonesia, Jakarta	11755 11788
		12095	0100-0200	WHRI, Noblesville, Indiana	7315 9495
		15360 21715	0100-0200	WINB, Red Lion, Pennsylvania	15145
0100-0145	Radio Berlin International, GDR	13690 11890 6080	0100-0200	WRNO Worldwide, Louisiana	7355
0100-0150	Deutsche Welle, Koln, West Germany	6040 6145 9585	0100-0200	WWCR, Nashville, Tennessee	7530
		15105 11865	0100-0200	WYFR, Okeechobee, Florida	5985 17612 11720 15440
0100-0157	Radio Prague, Czechoslovakia	5930 7345 9540 11680	0130-0200	M-A Voice of Greece, Athens	11645 9395 9420
0100-0200	Radio Moscow North American Svc	11735 9685 9720 17605	0130-0200	Radio Budapest, Hungary	6110 9520 9835 11910
		11905 11850 11750 17700	0130-0200	Radio Austria International, Vienna	15160
		9530	0145-0200	Radio Berlin International, GDR	9870 9875 13730
0100-0200	Radio Moscow World Service	21690 21790 21525	0145-0200	BBC Alternative Programming, London	6080 11785 11890 15125
0100-0200	M-F BBC (For China, Mongolia, Japan)	15280 21715	0145-0200	BBC World Service, London, England	5965 9580 11955 15380
0100-0200	S,M Radio Canada International, Montreal	13720 11940 11845 9755	0145-0200		5975 6005 6175 7135
		9535	0155-0200	Vatican Radio, Vatican City	7325 9590 9915 11750
0100-0200	Radio New Zealand, Wellington	17680			15260 15360 21715 12095
0100-0200	SLBC Domestic Service, Sri Lanka	4940			7125 9645 11750
0100-0200	CBN, St. John's, Nfld, Canada	6160			15220 15360
0100-0200	CBU, Vancouver, British Columbia	6160			0200-0230 BBC Alternative Programming, London
0100-0200	CFCF, Montreal, Quebec, Canada	6005			9580 11955 15380
0100-0200	CFCN, Calgary, Alberta, Canada	6030			0200-0230 BBC World Service, London, England
0100-0200	CHNS, Halifax, Nova Scotia, Canada	6130			5975 6005 6175 7135
0100-0200	Christian Science World Svc, Boston	15435	0200-0215	Vatican Radio, Vatican City	7125 9645 11750
0100-0200	WRNO New Orleans, Louisiana	7355	0200-0220	Radio Veritas-Asia, Philippines	15220 15360
0100-0200	Radio Baghdad, Iraq	11720	0200-0230	BBC Alternative Programming, London	9580 11955 15380
0100-0200	CKWX, Vancouver, British Columbia	6080	0200-0230	SLBC Domestic Service, Sri Lanka	4940
0100-0200	CFRB, Toronto, Ontario, Canada	6070	0200-0230	BBC World Service, London, England	5975 6005 6050 6110
0100-0200	FEBC Radio Int'l, Philippines	15480			6175 7135 7325 9590
0100-0200	HCJB, Quito, Ecuador	9745 11795 15155			9915 11750 12095 15260
0100-0200	KUSW, Salt Lake City, Utah	15580			15360 15390 21715 9410
0100-0200	T-A KVOH, Rancho Simi, California	17775 (ML)	0200-0230	M-F FEBC Radio Int'l, Philippines	15480
0100-0200	T-A RAE, Buenos Aires, Argentina	9690 11710	0200-0230	T-A Voice of America	5995 9775 9815 11580
0100-0200	Radio Australia, Melbourne	17630 21525 15240 15320	0200-0230	Swiss Radio International, Berne	15205
		17600 17715 17750 17795	0200-0230	Radio Berlin International, GDR	6095 6135 9725 9885
		21740	0200-0230	Radio Kiev, The Ukraine	12035 17730
0100-0200	Radio Havana Cuba	11820			6080 11785 11890 15125
0100-0200	Radio Japan General Svc, Tokyo	17835 17810 17845 5960			12060 11770 17690 15180
		6090			17665

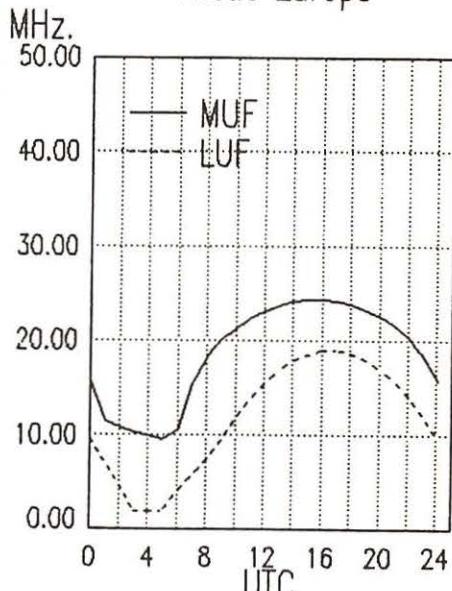
East Coast To
Western Europe



East Coast To
Eastern Europe



East Coast To
Arctic Europe

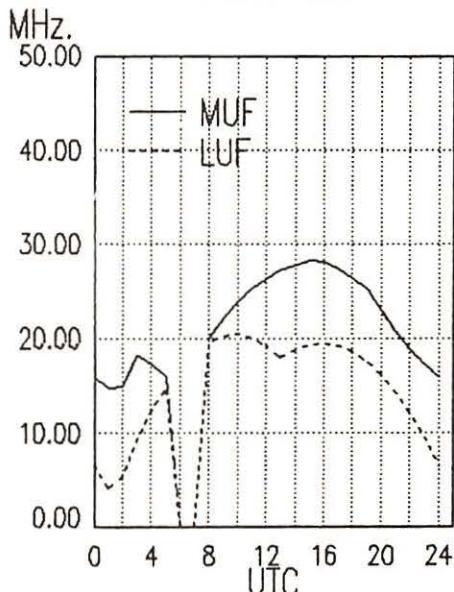


frequency

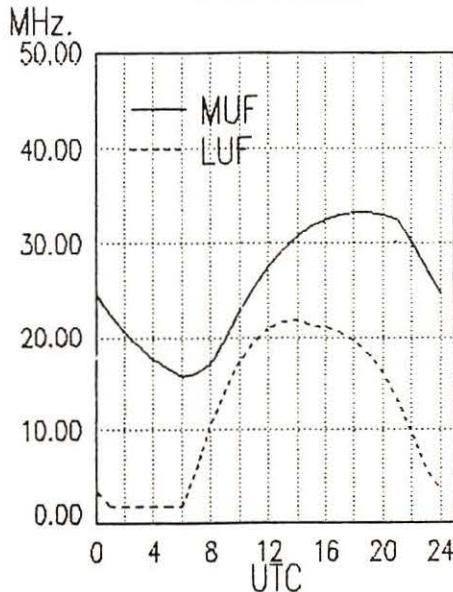
section

0200-0250	Deutsche Welle, Köln, W. Germany	11835	7285	9615	9690
0200-0250	Radio Baghdad, Iraq	15235	11945	17770	
0200-0250	Radio Bras, Brasilia, Brasil	11720			
0200-0300	Adventist World Radio-Asia, Guam	11745			
0200-0300	Radio Moscow North American Svc	13720			
		17720	17825	9530	11735
		9685	9720	11750	11850
		11950			
0200-0300	Radio Moscow World Service	21690	21790	17610	17620
		17890			
0200-0300	CBC Northern Quebec Service, Can	9625	(ML)		
0200-0300	CBN, St. John's, Newfoundland, Can	6160			
0200-0300	CBU, Vancouver, British Columbia	6160			
0200-0300	CFCF, Montreal, Quebec, Canada	6005			
0200-0300	CFCN, Calgary, Alberta, Canada	6030			
0200-0300	CHNS, Halifax, Nova Scotia, Canada	6130			
0200-0300	Christian Science World Svc, Boston	9455	9850	13760	
0200-0300	CKWX, Vancouver, British Columbia	6080			
0200-0300	CFRB, Toronto, Ontario, Canada	6070			
0200-0300	HCJB, Quito, Ecuador	9745	11795	15155	
0200-0300	T-S KUSW, Salt Lake City, Utah	15580			
0200-0300	Radio Australia, Melbourne	17630	15240	17715	17750
		17795	21740	17600	21525
		15320			
0200-0300	T-A Radio For Peace Int'l, Costa Rica	21566	13660		
0200-0300	T-A Radio Canada International, Montreal	9535	9755	11845	11940
		13720			
0200-0300	Radio Romania Int'l, Bucharest	5990	9510	9570	11830
		11940	6155		
0200-0300	Radio Cairo, Egypt	9475	9675		
0200-0300	Radio Havana Cuba	9710	11820		
0200-0300	Radio Luxembourg, Junglinster	6090			
0200-0300	Radio RSA, Johannesburg	15120	11935	9580	9615
0200-0300	Radio Tonga, Kingdom of Tonga	5030v			
0200-0300	Voice of America-South Asia Service	7115	7205	9740	11705
		15250	21525		
0200-0300	Voice of Free China, Taiwan	5950	7445	9680	11740
		11860	15345		
0200-0300	WHRI, Noblesville, Indiana	7315	9495		
0200-0300	WRNO Worldwide, Louisiana	7355			
0200-0300	WWCR, Nashville, Tennessee	7520			
0200-0300	WINB, Red Lion, Pennsylvania	15145			
0200-0300	WYFR, Okeechobee, Florida	6065	9505	11720	
0211-0230	IRR Voice of the Democratic Alliance of Burma (clandestine: Thai/Burmese border)	7137v			

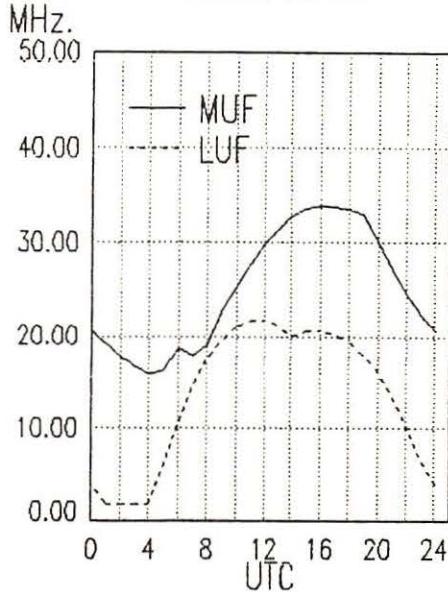
East Coast To
Middle East



East Coast To
West Africa



East Coast To
Central Africa



East Coast

frequency

section

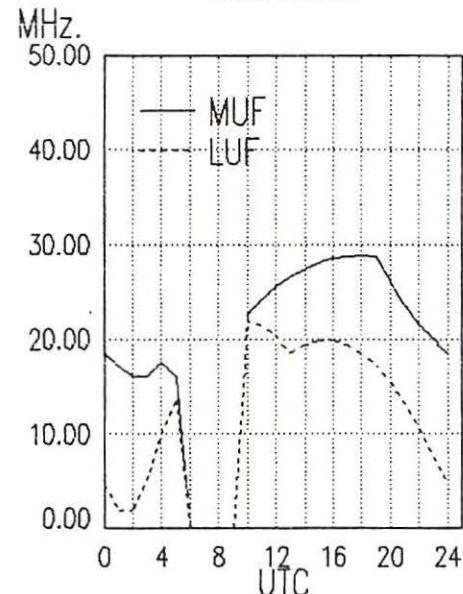
0215-0225	Radio Nepal, Katmandu	5005	7165	(alt. 3230)
0230-0300	BBC World Service, London, England	5975	6005	6175
		7135	7325	9915 11750
		11955	12095	15260 15360
		21715		
0230-0300	T-A Radio Portugal, Lisbon	9600	9680	9705 11840
0230-0300	Radio Sweden, Stockholm	9695	11705	
0230-0300	Radio Berlin International, GDR	9730	13610	15240
0230-0300	Radio Tirana, Albania	9760	11825	
0245-0300	Voice of Eelam (clandestine: Tamil rebels in Sri Lanka) 7000			
0249-0257V	Radio Yerevan, Armenia	11770	12060	15180 17690
		17665		

0300 UTC [11:00 PM EDT/8:00 PM PDT]

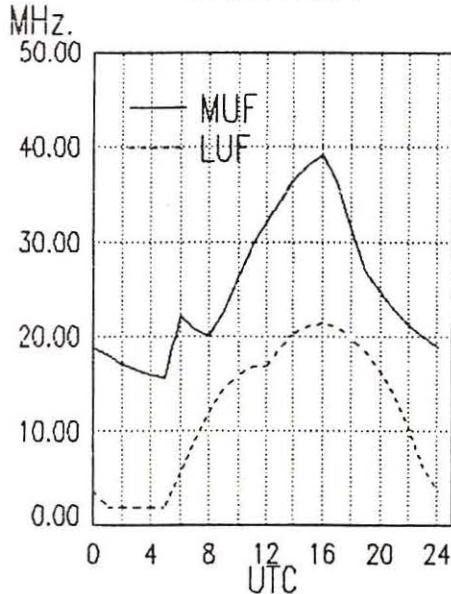
0300-0315	Azad Kashmir Radio, Pakistan	7286	4980	3665
0300-0315	Radio Berlin International, GDR	13610	9730	15240
0300-0315	BBC English by Radio, London	11730	11740	15420
0300-0315	BBC World Service, London, England	3255	5975	6005 6050
		6175	6190	6195 7135
		7325	9410	9600 9670
		9915	11750	11760 11845
		11955	12095	15220 15260
		15310	15420	17705 21715
0300-0330	Radio Cairo, Egypt	9475	9675	
0300-0330	Radio Japan General Service, Tokyo	17835	17810	17765 9645
0300-0330	Radio Japan Americas Svc, Tokyo	15195	17825	15325 21610
0300-0345	Radio Berlin International, GDR	11785	15125	
0300-0350	Deutsche Welle, Köln, West Germany	6085	6120	9545 15205
		11810		
0300-0355	Radio Beijing, China	9690	17855	11715 15100
0300-0357	Radio Prague, Czechoslovakia	5930	7345	9540 11680
		11990	13715	
0300-0400	CBC, Northern Quebec Service, Can	9625	(ML)	
0300-0400	Radio Moscow North American Svc	15180	17720	15425 17665
		17690		
0300-0400	Radio Moscow World Service	21690	21790	17890 17855
		17775	17700	17635 17620
		17610	15280	17825 12060
		11950	11850	11750 9685
		9765	9720	9530
0300-0400	Radio Sofia, Bulgaria	15160	15310	11720 11765
		11735	7255	

0300-0400	Voice of Turkey, Ankara	9445	17880
0300-0400	CBN, St. John's, Newfoundland, Can	6160	
0300-0400	CBU, Vancouver, British Columbia	6160	
0300-0400	CFCF, Montreal, Quebec, Canada	6005	
0300-0400	CFCN, Calgary, Alberta, Canada	6030	
0300-0400	CHNS, Halifax, Nova Scotia, Canada	6130	
0300-0400	Christian Science World Svc, Boston	9455	9850 13760
0300-0400	CKWX, Vancouver, British Columbia	6080	
0300-0400	CFRB, Toronto, Ontario, Canada	6070	
0300-0400	Faro del Caribe, San Jose, Costa Rica	5055	
0300-0400	HCJB, Quito, Ecuador	11795	15155
0300-0400	T-S KUSW, Salt Lake City, Utah	9815	
0300-0400	Radio 5, Johannesburg, South Africa	4880	
0300-0400	Radio Australia, Melbourne	17630	17600 15240 15320
		17715	17750 17795 21740
		21525	
0300-0400	Radio Cultural, Guatemala	3300	
0300-0400	Radio Havana Cuba	9710	11820
0300-0400	Radio Oranje, South Africa	3215	
0300-0400	Trans World Radio, Bonalre	9535	11930
0300-0400	Voice of America-Africa Service	6035	7280 9525 9575
		11835	
0300-0400	Voice of Free China, Taiwan	5950	7445 9680 9765
		11745	15345
0300-0400	WHRI, Noblesville, Indiana	7315	9495
0300-0400	WRNO Worldwide, Louisiana	7355	
0300-0400	WWCR, Nashville, Tennessee	7520	
0300-0400	WYFR, Okeechobee, Florida	6065	9505 15440
0310-0327	Vatican Radio, Vatican City	11725	
0310-0327	Red Cross Bcasting, Switzerland	6135	9725 9885 12035
0315-0330	Tuesday and Friday after last Sunday of the month.		
0315-0330	Radio for Peace Int'l, Costa Rica	7375	USB
0315-0330	BBC World Service, London, England	3255	5975 6005 6050
		6175	6190 6195 7135
		7325	9410 9600 9670
		9915	11750 11760 11845
		11955	12095 15220 15260
		15310	17705
0315-0345	Radio France International, Paris	3965	6045 7135 7175
		7280	9550 9745 9790
0330-0340	All India Radio, New Delhi	9800	11705 11995
		3905	4860 9610 11830
		11870	11890 15305
0330-0400	BBC Alternative Programming, London	3255	6005 6190 9600
		11730	11845 15420

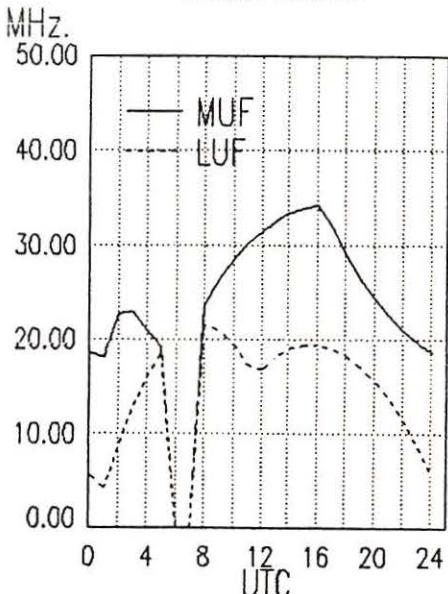
East Coast To East Africa



East Coast To South Africa



East Coast To Indian Ocean



frequency

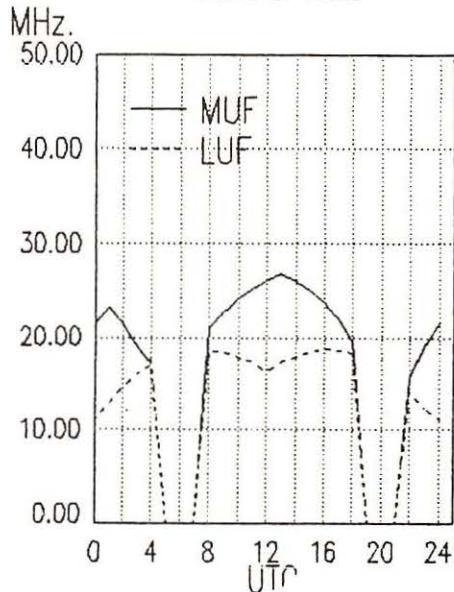
section

0330-0400	BBC World Service, London, England	5975	6175	6195	9410		11850	9765	9720
		9670	9915	11760	11955				
0330-0400	Radio Netherlands Int'l, Hilversum	12095	15310			0400-0500	CBC, Northern Quebec Service	9625	(ML)
		9590	6165			0400-0500	Radio for Peace Int'l, Costa Rica	7375	USB
0330-0400	Radio Tirana, Albania	9760	11825			0400-0500	CBN, St. John's, Newfoundland, Can	6160	
0330-0400	United Arab Emirates Radio, Dubai	11940	15400	15435	17890	0400-0500	CBU, Vancouver, British Columbia	6160	
0330-0400	Radio Japan General Service, Tokyo	17835	17810	17765		0400-0500	CFCF, Montreal, Quebec, Canada	6005	
0340-0350	M-A Voice of Greece, Athens	11645	9395	9420		0400-0500	CFCN, Calgary, Alberta, Canada	6030	
0345-0400	Radio Berlin International, GDR	11785	13690	15125		0400-0500	CHNS, Halifax, Nova Scotia, Canada	6130	
0350-0400	RAI, Rome, Italy	11905	15330	17795		0400-0500	Christian Science World Svc, Boston	9455	9840 13760 17780
		17690	17665			0400-0500	CKWX, Vancouver, British Columbia	6080	
						0400-0500	CFRB, Toronto, Ontario, Canada	6070	
						0400-0500	HCJB, Quito, Ecuador	11795	15155
						0400-0500	KUSW, Salt Lake City, Utah	9815	
						0400-0500	Radio 5, Johannesburg, South Africa	4880	
						0400-0500	Radio Australia, Melbourne	21525	21740 17600 15240
								15320	17715 17795 17750

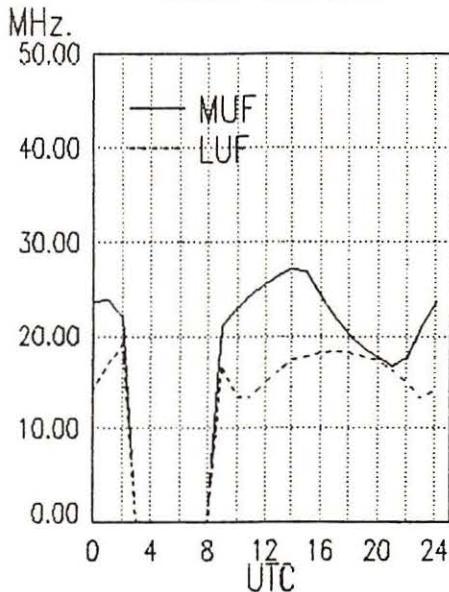
0400 UTC [12:00 AM EDT/9:00 PM PDT]

0400-0410	M-F Radio Zambia, Lusaka	4910				0400-0500	Radio Beijing, China	11695	11840 15195
0400-0410	RAI, Rome, Italy	11905	15330	17795		0400-0500	Radio Havana Cuba	9750	9710 11760 11820
0400-0415	Kol Israel, Jerusalem	17630	11655	15640	9435	0400-0500	Radio Oranje, South Africa	3215	
0400-0425	Radio Cultural, Guatemala	3300				0400-0500	M-AWMLK Bethel, Pennsylvania	9465	
0400-0425	Radio Netherlands Int'l, Hilversum	9590	6165			0400-0500	Radio Tonga, Kingdom of Tonga	5030v	
0400-0430	BBC World Service, London, England	3255	3955	5975	6005	0400-0500	Voice of America-Middle East Service	3980	5995 6040 6140
		6175	6180	6190	6195			7170	7200 11785 15205
		7105	9410	9600	9610	0400-0500	TP Voice of Hope via KFBS, Guam	15225	
		9670	9915	11760	11955	0400-0500	Radio Canada International	15275	
		12095	15070	15245	15280	0400-0500	WHRI, Noblesville, Indiana	7315	9495
		15310	15420	17885	21715	0400-0500	WRNO Worldwide, Louisiana	6185	
		9580				0400-0500	WWCR, Nashville, Tennessee	7520	
0400-0430	Radio Romania Int'l, Bucharest	5990	9510	9570	11830	0400-0500	WYFR, Okeechobee, Florida	6065	9505
		11940	6155			0425-0440	RAI, Rome, Italy	5990	7275
0400-0430	Swiss Radio International, Berne	6135	9725	9885	12035	0430-0500	Radio New Zealand, Wellington	17680	
0400-0430	Trans World Radio, Bonaire	11930	9535			0430-0500	BBC Alternative Programming, London	6005	6190 9600 11940
0400-0430	Radio Berlin International, GDR	11785	13690	15125		0430-0500		15400	15420
0400-0430	Voice of America-Africa Service	6035	7280	9525	9575	0430-0500	BBC World Service, London, England	3955	5975 6180 6195
		11835	11785					9410	9915 12095 15070
0400-0450	Deutsche Welle, Koln, West Germany	7225	7150	9765	9565			15245	15280 15310 21715
		11765	15265					7120	
0400-0450	Radio Pyongyang, North Korea	13650	15180	17765		0430-0500	Radio for Peace Int'l, Costa Rica	7375	13665
0400-0455	Radio Beijing, China	11695				0430-0500	Radio Tirana, Albania	9500	11835
0400-0500	Radio Moscow North American Svc	15180	17720	15425	17665	0430-0500	Voice of America-Africa Service	6035	7280 9525 9575
		17690				0445-0500	Radio Berlin International, GDR	11785	
0400-0500	Radio Moscow World Service	11750	9685	9530	21690	0455-0500	Voice of Nigeria, Lagos	7255	
		21790	17890	17855	17775				
		17700	17635	17620	17610				
		15280	17825	12060	11950				

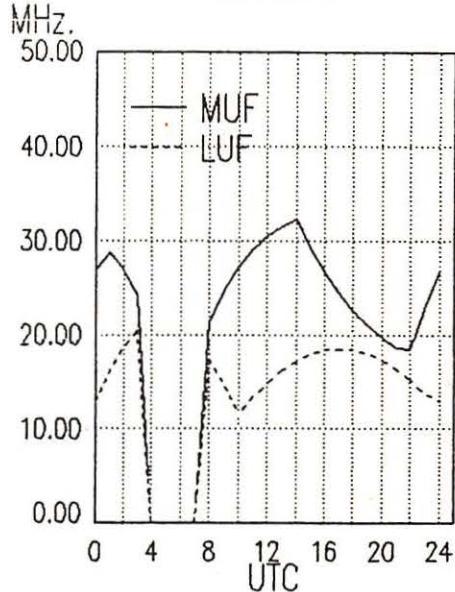
East Coast To
Central Asia



East Coast To
South East Asia



East Coast To
Indonesia



East Coast

frequency

section

0500 UTC [1:00 AM EDT/10:00 PM PDT]

0500-0505	Radio Oranje, South Africa	3215
		17630
0500-0515	M-F Radio Canada International, Montreal	6050 6150 7295 9750
		11775 17840
0500-0515	Azad Kashmir Radio, Pakistan	7268 4980 3665
0500-0520	Radio 5, Johannesburg, South Africa	4880
0500-0530	Vatican Radio African Service	17710 17730 21650
0500-0530	Radio Berlin International, GDR	11785
0500-0530	Voice of America-Middle East Service	5995 6060 6140 7170
		7200 9670 9700 9740
		11925 15205
0500-0545	Radio Berlin International, GDR	5965 6115 9645 13610
		9760
0500-0545	BBC World Service, London, England	3955 5975 6005 6180
		6190 6195 7120 7230
		9410 9580 9600 9640
		11760 11940 12095 15070
		15245 15280 15310 15400
		15420 17885 21470 21715
		9915
0500-0550	Deutsche Welle, Koln, West Germany	5960 6120 9670 11705
		11845 6180
0500-0555	Radio Beijing, China	11840
0500-0600	Radio Kuwait	15345
0500-0600	CBU, Vancouver, British Columbia	6160
0500-0600	Radio Jordan, Amman	13655
0500-0600	CFCF, Montreal, Quebec, Canada	6005
0500-0600	CFCN, Calgary, Alberta, Canada	6030
0500-0600	CHNS, Halifax, Nova Scotia, Canada	6130
0500-0600	M-AWMLK Bethel, Pennsylvania	9465
0500-0600	Christian Science World Svc, Boston	9455 9840 13760 17780
0500-0600	Radio Moscow North American Svc	15180 13665 15425 17665
0500-0600	Radio Moscow World Service	9765 12060 11950 15455
0500-0600	Radio New Zealand, Wellington	17680
0500-0600	CKWX, Vancouver, British Columbia	6080
0500-0600	CFRB, Toronto, Ontario, Canada	6070
0500-0600	HCJB, Quito, Ecuador	6230 9745 11775
0500-0600	T-S KUSW, Salt Lake City, Utah	6175
0500-0600	Radio Australia, Melbourne	17600 21740 15240 15560
		15160 17750 17795
0500-0600	Radio Havana Cuba	9710 11760 11820 9750
0500-0600	Radio Japan General Service, Tokyo	17765 17810 17825 17890

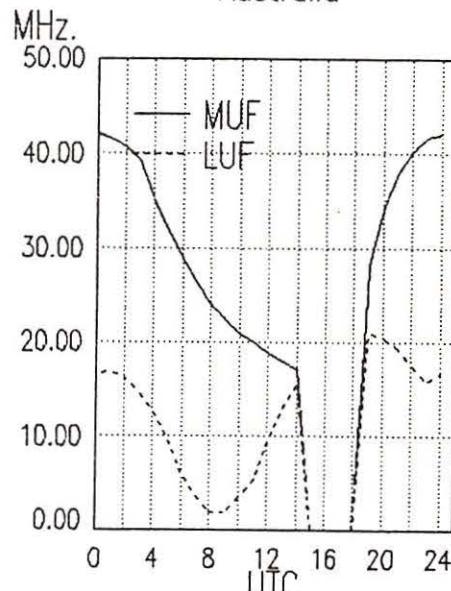
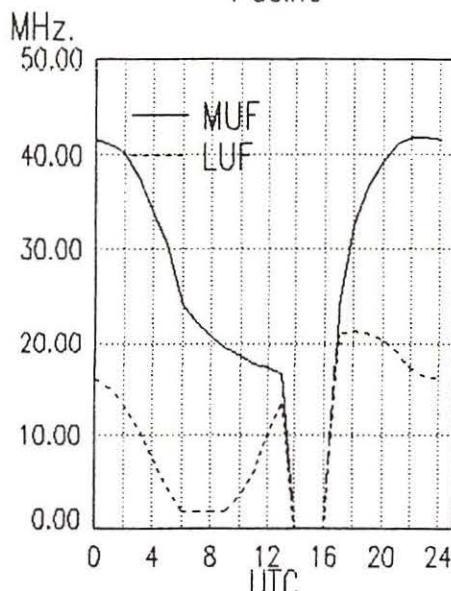
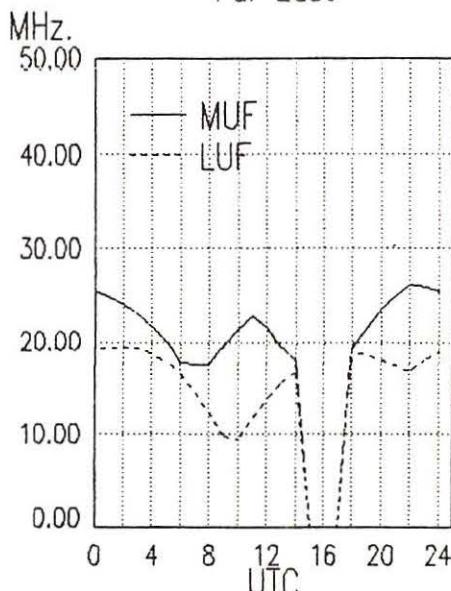
0500-0600	Radio for Peace Int., Costa Rica	15195
		7375 USB
0500-0600	Radio Tonga, Kingdom of Tonga	5030v
0500-0600	Spanish National Radio, Madrid	9630
0500-0600	Voice of America-Africa Service	3990 6035 7280 9540
		9575
0500-0600	Voice of America-Middle East Service	3980 5995 6040 6060
		7170 7200 11785 15205
0500-0600	Voice of Hope via KFBS, Guam	15225
0500-0600	Voice of Nigeria, Lagos	7255
0500-0600	WHRI, Noblesville, Indiana	7315 9495
0500-0600	WWCR, Nashville, Tennessee	7520
0500-0600	WYFR, Okeechobee, Florida	5985 11580 17640 15566
0510-0600	Radio Oranje, South Africa	7285
0515-0600	Radio Berlin International, GDR	15240 17880
0525-0600	Radio 5, Johannesburg, South Africa	11885
0530-0600	BBC English by Radio, London	6050 6150 7210 9750
0530-0600	Radio Austria International, Vienna	6015
0530-0600	Radio Romania Int'l, Bucharest	15380 17720 17745
0530-0600	UAE Radio Dubai	15435 17830 21700
0545-0600	BBC World Service, London, England	3955 5975 6180 6190
		6195 7120 7230 9410
		9580 9600 9640 11760
		11940 12095 15070 15245
		15280 15310 15400 15420
0555-0600	Voice of Malaysia, Kuala Lumpur	17885 21470 21715
		6175 9750 15295
0600 UTC [2:00 AM EDT/11:00 PM PDT]		
0610-0615	Sierra Leone Brdcstng.Svc.,Freetown	3316
0600-0630	Radio Australia, Melbourne	17600 21740 15240
		21525 17715
0600-0630	BBC World Service, London, England	3955 5975 6180 6190
		6195 7120 7150 7230
		9410 9580 9600 9640
		11760 11940 11955 12095
		15070 15245 15280 15310
		15360 15400 15420 17640
		17710 17740 17790 17885
0600-0630	Laotian National Radio	21470 21715
0600-0630	S Radio Norway International, Oslo	7116v
0600-0645v	Radio For Peace, Int., Costa Rica	5990 15165
		7375 USB

East Coast To
Far East

East Coast

East Coast To
Pacific

East Coast To
Australia

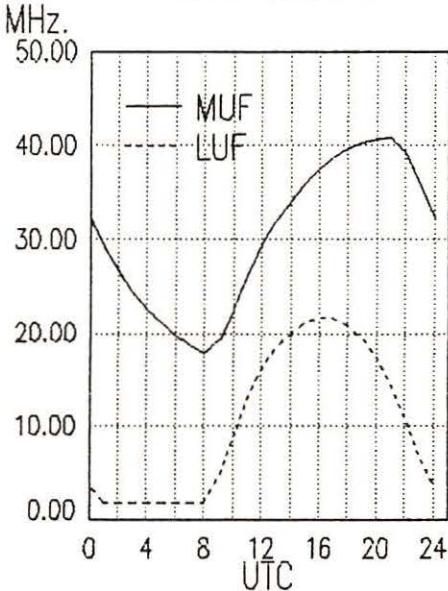


frequency

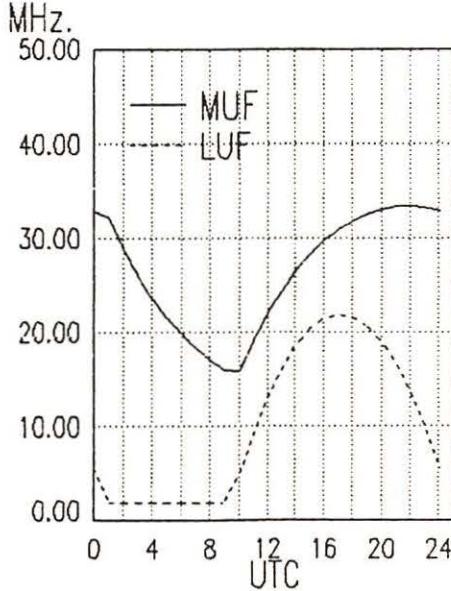
section

0600-0650	Deutsche Welle, Kolin, W. Germany	11765	13790	15185	17875	0630-0700	BBC World Service, London, England	3955	5975	6180	6190
0600-0650	CBU, Vancouver, British Columbia	6160						6195	7120	7150	7230
0600-0700	Radio Pyongyang, North Korea	15180	13650					9410	9580	9640	11760
0600-0700	CFCF, Montreal, Quebec, Canada	6005						11955	12095	15070	15245
0600-0700	SIBC Solomon Islands	9545	5020					15280	15310	15360	15420
0600-0700	Radio New Zealand, Wellington	17680						17640	17710	17885	17790
0600-0700	Radio 5, South Africa	11885	6065					21470	21715		
0600-0700	WYFR, Okeechobee, Florida	15566	17640	5985	6065	0630-0700	Radio Polonia, Warsaw, Poland	6135	7270	15120	9675
		7355				0630-0700	Swiss Radio International, Berne	12030	15430	17570	21520
0600-0700	ABC Domestic Network, Australia	15425				0645-0700	BBC English by Radio, London	5875	7260	11945	
0600-0700	M-AWMLK Bethel, Pennsylvania	9465				0645-0700 A	Radio for Peace Int'l, Costa Rica	7375	USB		
0600-0700	CFCN, Calgary, Alberta, Canada	6030				0645-0700	GBC Radio, Accra, Ghana	6130			
0600-0700	CHNS, Halifax, Nova Scotia, Canada	6130				0645-0700	HCJB, Quito, Ecuador	9610	11835	(alt 6050)	
0600-0700	Christian Science World Svc, Boston	9455	9840	11980	17780	0645-0700	Radio Romania Int'l, Bucharest	21550	11940	15335	17720
0600-0700	CKWX, Vancouver, British Columbia	6080						17805	15250		
0600-0700	CFRB, Toronto, Ontario, Canada	6070						9760	11840		
0600-0700	Radio Moscow North American Svc.	12050	13665	15180	15425						
0600-0700	Radio Moscow World Service	11950	15435	15455	15460						
		15475	17570	17600	17655						
		15560	15595								
0600-0700	Voice of the Mediterranean, Malta	9765									
0600-0700	HCJB, Quito, Ecuador	15155	9745	11795							
0600-0700	KUSW, Salt Lake City, Utah	6175									
0600-0700	Radio Jordan, Amman	13655									
0600-0700	Radio Tonga, Kingdom of Tonga	5030v									
0600-0700	Voice of America-Africa Service	3990	6035	6080	6125						
		7280	9530	9540	9575						
		11915									
0600-0700	Voice of America-Middle East Serv	3980	5965	5995	6060						
		6095	6140	7170	7200						
		7325	9715	11785	11805						
		11925	15195	15205							
0600-0700	Radio Havana Cuba	11835									
0600-0700	WHRI, South Bend, Indiana	9495									
0600-0700	Voice of Hope, Lebanon	6280									
0600-0700 TP	Voice of Hope via KFBS, Guam	15225									
0600-0700	Voice of Malaysia, Kuala Lumpur	6175	9750	15295							
0600-0700	Radio Korea, Seoul	7275									
0630-0700	Radio Sofia, Bulgaria	11720	15160	17820							
0630-0700	Radio Finland, Helsinki	11755	9560	6120							
0630-0700	Vatican Radio African Service	17710	17730	21650							
0630-0700	Radio Australia, Melbourne	21740	15240	17715	17600						
0630-0700	Radio Tirana, Albania	9500	7205								
0630-0700	BBC Alternative Prog, London	9600	11940	15400	17740						
		15566	7355	6065							
		7283									

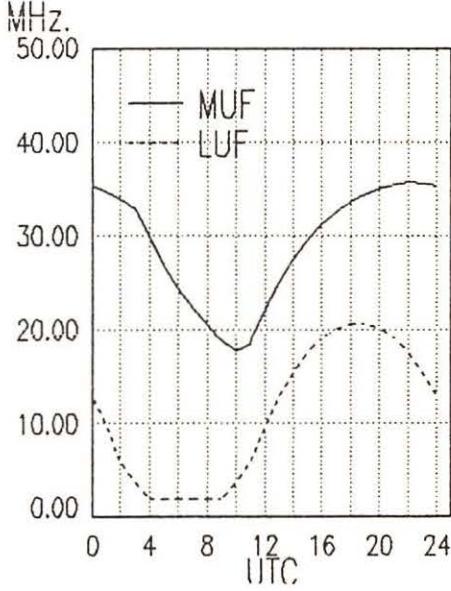
East Coast To
South America



East Coast To
Central America



East Coast To
West Coast



East Coast

frequency

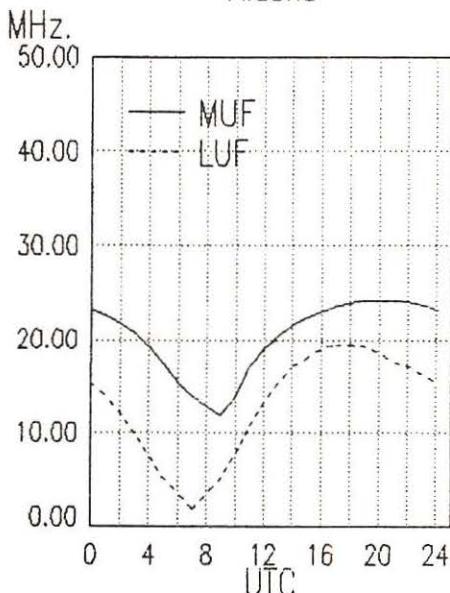
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0700-0800	Solomon Islands Broadcasting Co.	5020	9545
0700-0800	Voice of Free China, Taiwan	5950	
0700-0800	United Nations Radio via Italian Radio Relay Service, Milan	9860	
0700-0800	CFCF, Montreal, Quebec, Canada	6005	
0700-0800	CFCN, Calgary, Alberta, Canada	6030	
0700-0800	CHNS, Halifax, Nova Scotia, Canada	6130	
0700-0800	Christian Science World Svc, Boston	9455	9840 11980 17780
		17855	
0700-0800	Radio Moscow World Service	11950	
0700-0800	CKWX, Vancouver, British Columbia	6080	
0700-0800	CFRB, Toronto, Ontario, Canada	6070	
0700-0800	GBC Radio, Accra, Ghana	6130	
0700-0800	HCJB, Quito, Ecuador	9610	11835 (alt. 6050)
0700-0800	KNLS, Anchor Point, Alaska	9785	
0700-0800	Radio Japan, Tokyo	21500	17765 17810 17890
		21690	
0700-0800	Radio Jordan, Amman	13655	
0700-0800	Radio Tonga, Kingdom of Tonga	5030V	
0700-0800	TP Voice of Hope via KFBS, Guam	15225	
0700-0800	Voice of Malaysia, Kuala Lumpur	6175	9750 15295
0710-0800	HCJB, Quito, Ecuador(S. Pacific Sv.)	6130	9745 11925
0715-0730	BBC English by Radio, London	11860	15105
0715-0730	Vatican Radio, Vatican City	15190	17730
0715-0800	S FEBA, Mahe, Seychelles	15275	17820
0730-0733	Radio Prague, Czechoslovakia	9505	7345 6055
0730-0745	BBC English by Radio, London	3975	6010 7210 9825
0730-0800	ABC, Alice Springs, Australia	2310	(ML)
0730-0800	Radio Prague, Czechoslovakia	21705	17840 11685
0730-0800	ABC, Katherine, Australia	2485	
0730-0800	ABC, Tennant Creek, Australia	2325	(ML)
0730-0800	Radio Australia, Melbourne	15240	17715 17600 15160
		9655	17630
0730-0800	Radio Austria Int'l, Vienna	21490	15410 13730 6155
0730-0800	BBC Alternative Programming, London	9600	11860 15105
0730-0800	BBC World Service, London, England	5975	6190 7150 7325
		9410	9640 11760 11940
		11955	12095 15070 15280
		15310	15360 15420 17640
		17710	17740 17790 21660
		21715	15400
0730-0800	M-F BBC World Service, London, England	6180	17885 21470 15245
0730-0800	Radio Netherlands, Hilversum	9630	15560
0730-0800	Swiss Radio Int'l European Service	3985	6165 9535
0745-0800	Radio Berlin International, GDR	6040	6115 7185 9730

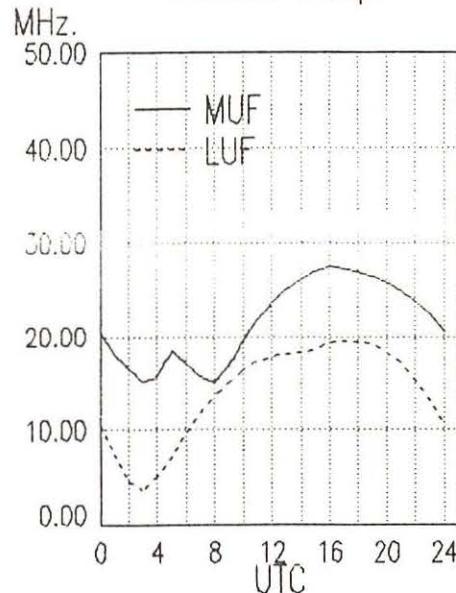
0800 UTC [4:00 AM EDT/ 1:00 AM PDT]

0800-0810	Sierra Leone Brdcstng Co., Freetown	3316
0800-0825	BRT Brussels, Belgium	9925
0800-0825	Radio Netherlands Int'l, Hilversum	9630 15560
0800-0825	Voice of Malaysia, Kuala Lumpur	6175 9750 15295
0800-0825	Radio Finland, Helsinki	17800 21550
0800-0830	S Radio Norway International, Oslo	15165 25730
0800-0830	Radio Australia, Melbourne	17600 9655 21525 9580
		17715 17750 15160 11930
0800-0830	Voice of Islam, Dhaka, Bangladesh	15195 11705
0800-0850	Radio Pyongyang, North Korea	15180 15160 11830
0800-0900	Radio New Zealand, Wellington	17630
0800-0900	Radio Moscow World Service	21690 21790
0800-0900	ABC, Alice Springs, Australia	2310 (ML)
0800-0900	ABC, Katherine, Australia	2485
0800-0900	ABC, Perth, Australia	15425
0800-0900	ABC, Tennant Creek, Australia	2325 (ML)
0800-0900	A Radio for Peace Int'l, Costa Rica	7375 USB
0800-0900	Voice of Hope, Lebanon	6280
0800-0900	CBN, St. John's, Newfoundland, Can	6160
0800-0900	CBU, Vancouver, British Columbia	6160
0800-0900	CFCF, Montreal, Quebec, Canada	6005
0800-0900	CFCN, Calgary, Alberta, Canada	6030
0800-0900	CHNS, Halifax, Nova Scotia, Canada	6130
0800-0900	Christian Science World Svc, Boston	9455 17855 9840 9530
		13760
0800-0900	CKWX, Vancouver, British Columbia	6080
0800-0900	CFRB, Toronto, Ontario, Canada	6070
0800-0900	HCJB, Quito, Ecuador(alt. S. Pac. Svc.)	6130
0800-0900	HCJB, Quito, Ecuador(S. Pacific Sv)	9745 11925
0800-0900	KNLS, Anchor Point, Alaska	11715
0800-0900	Solomon Islands Broadcasting Co.	5020
0800-0900	WHRI, South Bend, Indiana	7355
0800-0900	KTWR, Agana, Guam	15200
0800-0900	KUSW, Salt Lake City, Utah	6135
0800-0900	Radio Jordan, Amman	13655
0800-0900	Radio Tonga, Kingdom of Tonga	5030V
0800-0900	Voice of Indonesia, Jakarta	11755 11788
0800-0900	Voice of Nigeria, Lagos	7255
0800-0900	S WRNO Worldwide, Louisiana	6185
0810-0820	Bayerischer Rundfunk, Munich	6085

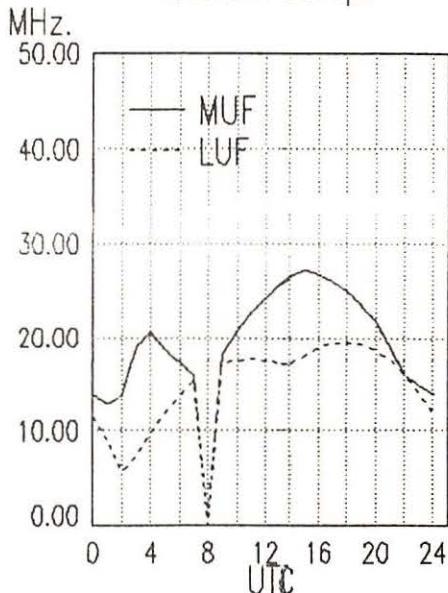
East Coast To
Alaska



Midwest To
Western Europe



Midwest To
Eastern Europe

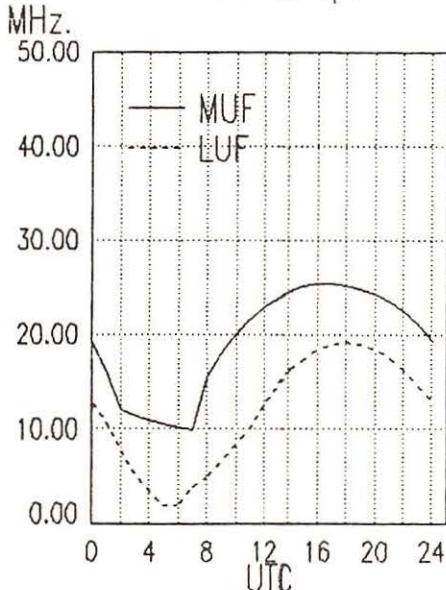


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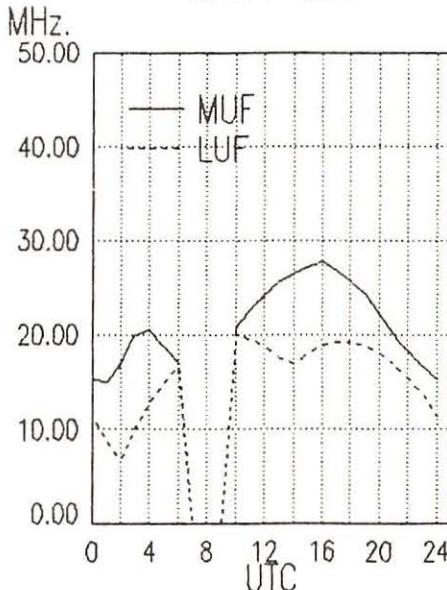
section

0830-0900	Radio Australia, Melbourne	15240 17750 17715 17600 11930 11720 9655 9580 15160	0900-1000	Voice of Hope, Lebanon	6280
0830-0900	Radio Prague, Czechoslovakia	21705 17840 11685	0900-1000	BBC World Service, London, England	5975 6045 6180 6190
0830-0833	Radio Prague, Czechoslovakia	9505 7345 6055			6195 7325 9410 9660
0830-0855	M-A Radio Netherlands Int'l, Hilversum	9770			9740 9750 9760 11750
0830-0900	Radio Beijing, China	11755 15440 17710			11760 11940 12095 15070
0830-0900	Radio Netherlands Int'l, Hilversum	17575 21485			15245 15285 15310 15360
0830-0900	Radio Finland, Helsinki	21550 17800			15400 15420 17640 17705
0830-0900	Swiss Radio International, Berne	9560 13685 17670 21695	0900-1000	CFCF, Montreal, Quebec, Canada	6005
0845-0900	KTWR, Agana, Guam	15210	0900-1000	CFCN, Calgary, Alberta, Canada	6030
0850-0900	All India Radio, New Delhi	5960 5990 6010 6020 6050 6065 6100 6140 7110 7140 7150 7160 7250 7280 7295 9610 11850 15235 15250 17705	0900-1000	CHNS, Halifax, Nova Scotia, Canada	6130
			0900-1000	Christian Science World Svc, Boston	9455 17855 9840 9530
					13760
				CKWX, Vancouver, British Columbia	6080
				CFRB, Toronto, Ontario, Canada	6070
				FEBC Radio Int'l, Philippines	11850
				HCJB, Quito, Ecuador(all. S.Pac.Sv.)	6130
				HCJB, Quito, Ecuador(S.Pac.Serv.)	9745 11925
				KUSW, Salt Lake City, Utah	6135
				Radio Japan Australian Svc., Tokyo	17890 15270
				Radio Japan General Service, Tokyo	17810
0900-0910	KTWR, Agana, Guam	11805		Radio Jordan, Amman	13655
0900-0915	Radio Budapest, Hungary	15160 15220 11925 9835 9585 6110		Radio Metro, Johannesburg, S.Africa	11805
0900-0920	ABC, Perth, Australia	15425		UN Radio Tanpa, Nagara, Japan	3925
0900-0925	BRT Brussels, Belgium	21810 26050		Radio Tonga, Kingdom of Tonga	5030v
0900-0925	Radio Netherlands Int'l, Hilversum	17575 21485		Voice of Nigeria, Lagos	7255
0900-0930	Radio Australia, Melbourne	9580 9655 9760 11720 15415 17715 11930 6020 15160 15240		WHRI, Noblesville, Indiana	7355 9495
0900-0930	Radio Prague, Czechoslovakia	21705 17840 11685		WRNO Worldwide, Louisiana	6185
0900-0930	Radio Beijing, China	11755 15440 17710		ABC, Perth, Australia	6140
S 0900-0930	Radio Norway International, Oslo	25730		Radio Budapest, Hungary	15160 15220 11925 9835
0900-0945	Radio Berlin International, GDR	11890			9585 6110
0900-0950	Deutsche Welle, Koln, West Germany	6160 9565 15410 11740 17780 17820 21600 21650 21680			15240 9710
0900-1000	ABC, Alice Springs, Australia	2310 (ML)		Radio Australia, Melbourne	15415 11930 9760 9655
0900-1000	Solomon Islands Broadcasting Co.	5020			9580 6020 5995 15160
0900-1000	Radio Moscow World Service	17890 21660 21725 9875			17720 15250 4940 6085
0900-1000	ABC, Katherine, Australia	2485			9635
0900-1000	ABC, Tenant Creek, Australia	2325 (ML)		RRI Surabaya, Jawa Timur, Indonesia	2377
S 0900-1000	Adventist World Radio, Portugal	9670		BBC English by Radio, London	7180 11955 15280 17830
0900-1000	A Radio for Peace Int'l, Costa Rica	7375 USB		CBN, St. John's, New Newfoundland	6160
0900-1000	Radio New Zealand, Wellington	17730 9850a 15485a		KTWR, Agana, Guam	11805
S 0900-1000	Radio Bhutan, Thimpu	5023v		Radio Beijing, China	11755 15440 17710
				0935-0945 IRR Al-Quds Radio (Palestinian clandestine: Syria)	7460 (alt. 4320) ML
				0945-1000	6115

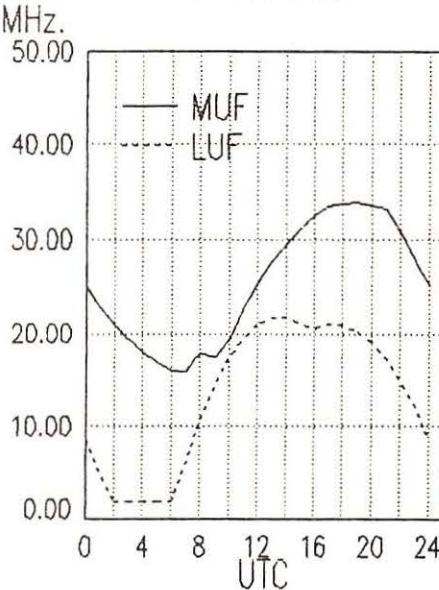
Midwest To
Arctic Europe



Midwest To
Middle East



Midwest To
West Africa



Midwest

frequency

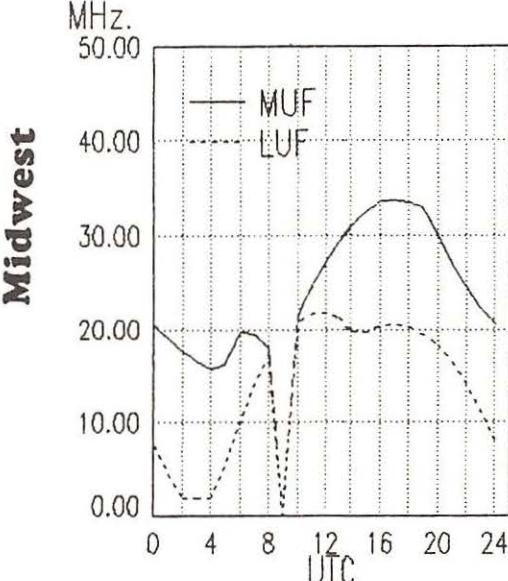
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0945-0948	Radio Prague, Czechoslovakia	9505	7345	6055
0945-1000	Radio Budapest, Hungary	7220	9585	9835 11910
		11925	15160	15220

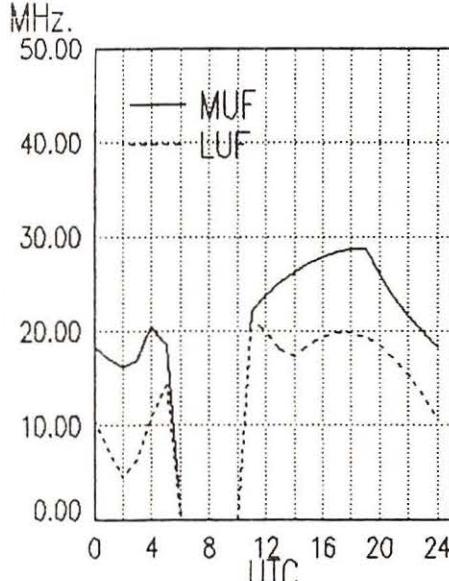
1000 UTC [6:00 AM EDT/3:00 AM PDT]

1000-1015	KTWR, Agana, Guam	11805
1000-1030	Radio Afghanistan, Kabul	17720 15250 4940 6085
		9635
1000-1030 A	Radio for Peace Int'l., Costa Rica	7375 USB
1000-1030	Kol Israel, Jerusalem	11585 15485 15650 17575
		17590 21745 21780
1000-1030	Radio Australia, Melbourne	9580 9655 15415 11930
		9770 5995 6020
1000-1030	Radio New Zealand, Wellington	15485
1000-1030	Radio Berlin International, GDR	6115
1000-1030	Voice of Vietnam, Hanoi	12010 15010 9840
1000-1030	Radio Beijing, China	11755 15440 17710
1000-1030	Swiss Radio International, Berne	9560 13685 17670 21695
1000-1100	ABC, Alice Springs, Australia	2310 (ML)
1000-1100	ABC, Katherine, Australia	2485
1000-1100	Solomon Islands Broadcasting Co.	5020
1000-1100	ABC, Perth, Australia	9610
1000-1100	ABC, Tennant Creek, Australia	2325 (ML)
1000-1100	Adventist World Radio-Asia, Guam	13720
1000-1100	Radio Moscow World Service	15260 15280 17645 17570
1000-1100	All India Radio, New Delhi	17685 17387 15050 15335
		21735
1000-1100	BBC World Service, London, England	5975 6045 6180 6190
		6195 7325 9410 9660
		9740 9750 9760 11750
		11760 11940 12095 15070
		15285 15310 15360 15400
		15420 17640 17705 17790
		17885 21470 21660 21710
1000-1100	CBN, St. John's, Nfld, Canada	6160
1000-1100	CFCF, Montreal, Quebec, Canada	6005
1000-1100	CFCN, Calgary, Alberta, Canada	6030
1000-1100	CHNS, Halifax, Nova Scotia, Canada	6130
1000-1100	Christian Science World Svc, Boston	9455 9495 9530 15115
1000-1100	CKWX, Vancouver, British Columbia	6080
1000-1100	CFRB, Toronto, Ontario, Canada	6070
1000-1100	FEBG Radio Int'l, Philippines	11850
1000-1100	HCJB, Quito, Ecuador	9745 11925

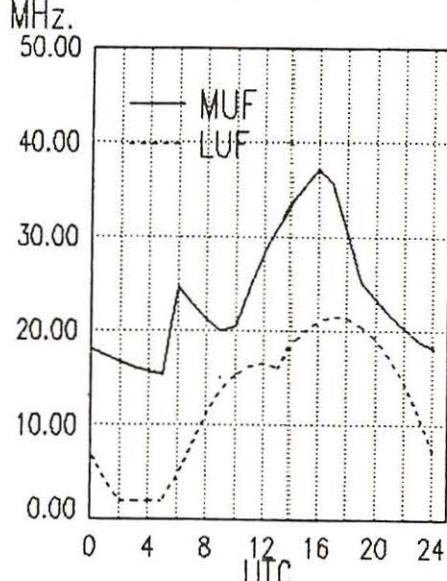
Midwest To Central Africa



Midwest To East Africa



Midwest To South Africa

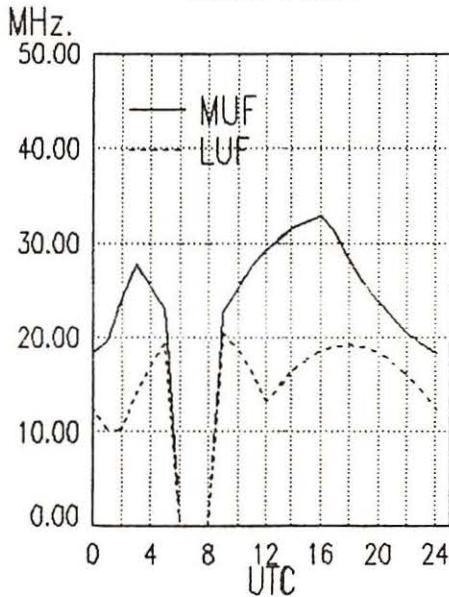


frequency

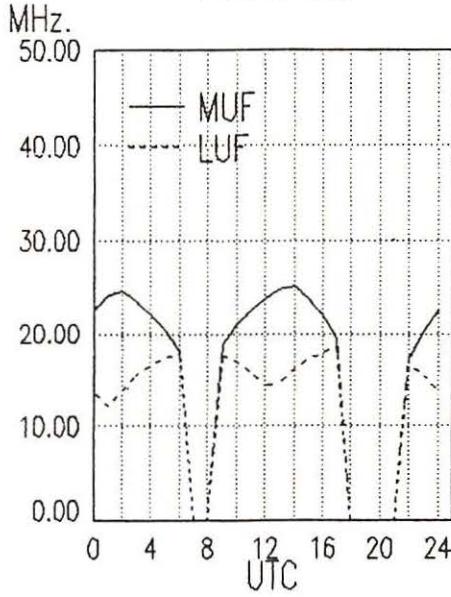
section

1100-1155	Radio Beijing, China	17855	1130-1200	Radio Australia, Melbourne	11930	11800	9770	9710
1100-1200	ABC, Alice Springs, Australia	2310 (ML)	1130-1200	Radio Thailand	9580	7215	6080	6035
1100-1200	Radio Moscow World Service	6000 9765 15320 17810	1130-1200	Radio Austria International, Vienna	11905	9655	4830	
1100-1200	ABC, Brisbane, Australia	9660	1130-1200	Radio Netherlands Int'l, Hilversum	6155	13730	15430	21490
1100-1200	ABC, Katherine, Australia	2485	1130-1200	Voice of Islamic Republic of Iran	5955	9715	17575	21480
1100-1200	ABC, Perth, Australia	9610	1130-1200	All India Radio, New Delhi	21615			
1100-1200	ABC, Tennant Creek, Australia	2325 (ML)	1135-1140	Radio Prague, Czechoslovakia	7190	7230	9695	
1100-1200	Trans World Radio, Bonaire	11815 15345	1145-1152	A-H BBC English by Radio, London	6065	7110	9610	9675
1100-1200	CBN, St. John's, Newfoundland, Can	6160	1145-1200	11620 11850 15320	1145-1200	9505 7345 6055		
1100-1200	CFCF, Montreal, Quebec, Canada	6005	1145-1200	7180 15280				
1100-1200	CFCN, Calgary, Alberta, Canada	6030						
1100-1200	CHNS, Halifax, Nova Scotia, Canada	6130						
1100-1200	Christian Science World Svc, Boston	9455 9495 9530 15115						
1100-1200	CKWX, Vancouver, British Columbia	6080						
1100-1200	CFRB, Toronto, Ontario, Canada	6070						
1100-1200	KUSW, Salt Lake City, Utah	9850						
1100-1200	Radio Beijing, China	17855						
1100-1200	Radio Japan, Tokyo	6120 11815 11840						
1100-1200	Radio Jordan, Amman	13655						
1100-1200	Radio RSA, Johannesburg	11805 25790 11900						
1100-1200	Voice of America-Caribbean Service	9590 11915						
1100-1200	Voice of America-East Asia Service	5985 6110 9760 11720						
		15155 15425						
1100-1200	S WRNO Worldwide, Louisiana	6185	1200-1215	Radio Berlin International, GDR	11970	15440	17880	21465
1115-1145	Radio Nepal, Katmandu (External Svc.)	5005	1200-1215	BBC English by Radio, London	6065	9680	11920	
1115-1130	BBC World Service, London, England	5965 5975 6045 6180	1200-1215	Vatican Radio, Vatican City	17840	17865	21485	21515
		6190 6195 7325 9410	1200-1225	Radio Netherlands Int'l, Hilversum	5955	9715	17575	21480
		9660 9740 9750 9760	1200-1225	Voice of Islamic Republic of Iran	21615			
		11760 11775 11940 12095	1200-1225	All India Radio, New Delhi	7190	7215	7230	9695
		15070 15140 15285 15310	1200-1225	Radio Finland, Helsinki	6065	9680	11920	
		15420 15360 15400 17640	1200-1230	Radio Australia, Melbourne	11930	6080	7205	11800
		17705 17790 17885 21470	1200-1230	Radio Bucharest, Romania	7215	9580	9710	9770
		21660 21710 25750 9515	1200-1230	Radio Thailand	15340	17720		
1115-1130	Vatican Radio, Vatican City	17840 21485	1200-1230	Radio Yugoslavia, Belgrade	11905	9655	4830	
1130-1145	BBC English by Radio, London	17810 21490	1200-1230	Radio East Africa	11735	15165	15325	
1130-1145	RRI Yogyakarta, Yogyakarta, Indonesia	5046	1200-1230	S Radio Norway International, Oslo	15165			
1130-1200	Radio Berlin International, GDR	11970 15440 17880 21465	1200-1230	Radio Tashkent, Uzbekistan	5945	9540	9600	11785
1130-1200	BBC World Service, London, England	5965 5975 6045 6190	1200-1300	ABC, Alice Springs, Australia	15470			
		6195 7325 9410 9660	1200-1300	ABC, Brisbane, Australia	2310 (ML)			
		9740 9750 9760 11760	1200-1300	ABC, Katherine, Australia	2485			
		11775 11940 12095 15070	1200-1300	Trans World Radio, Bonaire	9610			
		15140 15310 15420 17640	1200-1300	ABC, Tennant Creek, Australia	11815 15345			
		17705 17790 17885 21470	1200-1300	Adventist World Radio, Costa Rica	9725 11870			
		21660 21710 25750 9515	1200-1300	BBC World Service, London, England	5965 5975 6045 6190			
1130-1200	HCJB, Quito, Ecuador	11740			6195 7325 9410 9660			
					9740 9750 9760 11750			
					11760 11775 11940 12095			
					15070 15140 15310 17640			

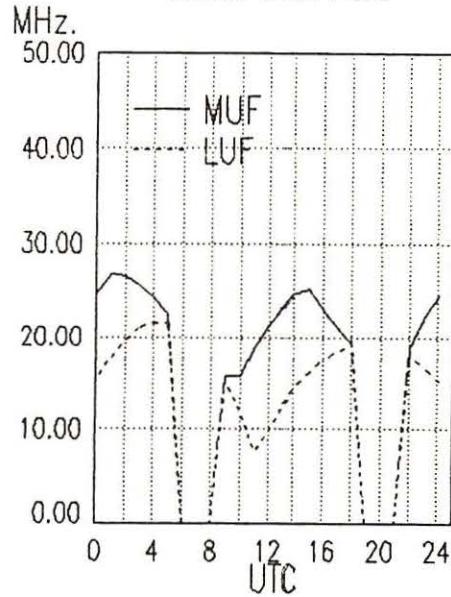
Midwest To
Indian Ocean



Midwest To
Central Asia



Midwest To
South East Asia



Midwest

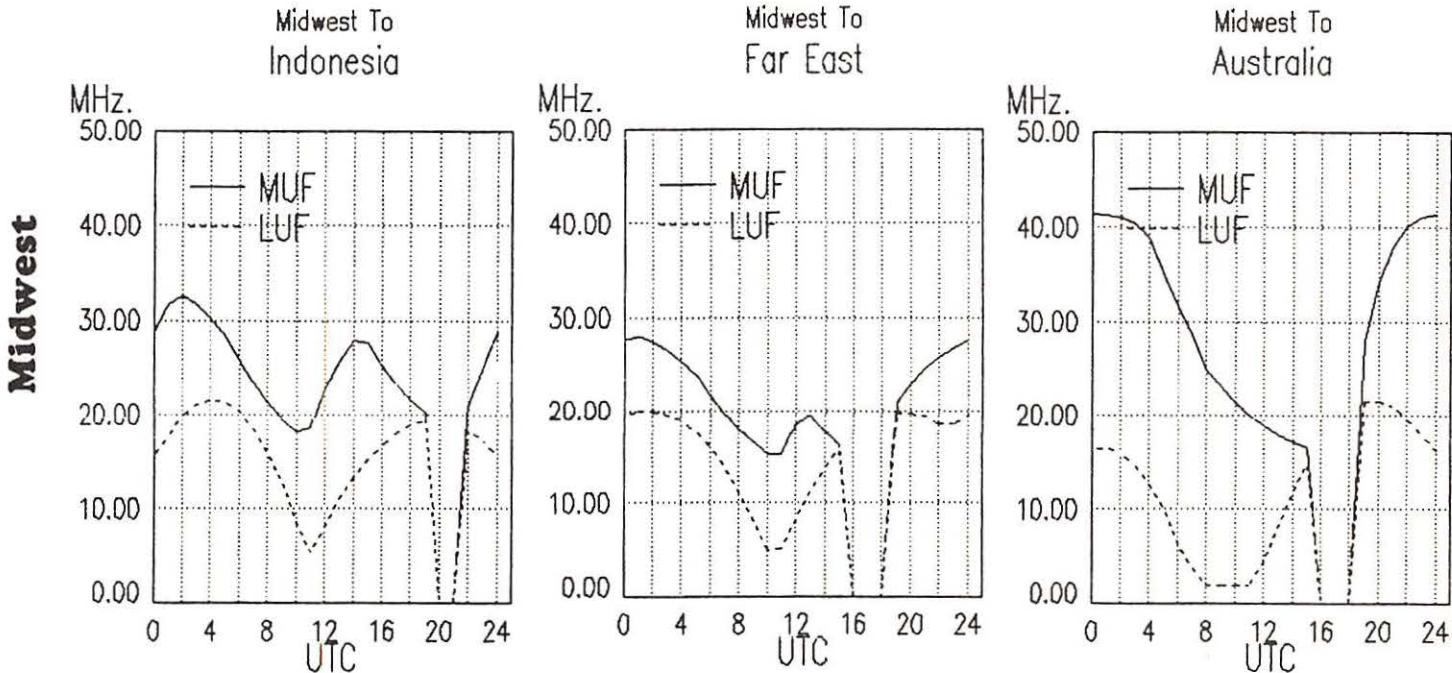
frequency

section

1200-1300	CBU, Vancouver, British Columbia	6160
1200-1300	CFCF, Montreal, Quebec, Canada	6005
1200-1300	CFCN, Calgary, Alberta, Canada	6030
1200-1300	CHNS, Halifax, Nova Scotia, Canada	6130
1200-1300	Christian Science World Service	9495 9465 11930 15285
1200-1300	CKWX, Vancouver, British Columbia	6080
1200-1300	Radio Moscow World Service	9765 11840 15475 17810
1200-1300	CFRB, Toronto, Ontario	6070
1200-1300	HCJB, Quito, Ecuador	11740 15115 17890
1200-1300	KUSW, Salt Lake City, Utah	9850
1200-1300	Radio Beijing, China	9530 17855 11600 15450 11650
1200-1300	Radio Jordan, Amman	13655
1200-1300	Radio RSA, Johannesburg	11900 11805 21590
1200-1300	Voice of America-East Asia Service	6110 9760 11715 15155 15425
1200-1300	WHRI, Noblesville, Indiana	11790
1200-1300	S WRNO Worldwide, Louisiana	9715
1200-1300	WYFR, Okeechobee, Florida	5950 7355 11830 17640 17750
1215-1225	Radio Bayrak, Northern Cyprus	6150
1215-1230	S BBC English by Radio, London	6125
1215-1300	Radio Berlin International, GDR	11705 15240
1230-1300	Radio Australia, Melbourne	11930 9770 9580 7215 7205 6080 6035 6020
1230-1240	Voice of Greece, Athens	17550 15630 11645
1230-1300	Voice of Turkey, Ankara	17785
1230-1300	Voice of Vietnam, Hanoi	15010 12010 9840
1230-1300	M-SBRT Brussels, Belgium	21820
1230-1300	M-F BRT Brussels, Belgium	21815
1230-1300	BBC English by Radio, London	6125 9515 9560 9600 9635 11710 11780 11845 12040 15115 15390 15435 17695 17880 17795 21695
1230-1300	Radio Bangladesh, Dhaka	15195 11705
1230-1300	Radio France International, Paris	9805 11670 15155 15195 17650 21635 21645
1230-1300	Radio Sweden, Stockholm	15190 21570 17740
1245-1300	Radio Prague, Czechoslovakia	9505 7345 6055
1245-1300	Radio Berlin International, GDR	11970 15440 17880 21465

1300 UTC [9:00 AM EDT/6:00 AM PDT]

1300-1325	Radio Finland, Helsinki	15400 21550
1300-1330	Radio Tirana, Albania	11855 9500
1300-1330	S Radio Norway International, Oslo	9590
1300-1330	Radio Canada Int'l, Montreal	11955 15385
1300-1330	S Trans World Radio, Bonaire	15345 11815
1300-1330	Swiss Radio Int'l European Service	3985 6165 9535
1300-1330	Radio Berlin International, GDR	11970 15440 17880 21465
1300-1345	Radio Berlin International, GDR	6115
1300-1345	BBC World Service, London, England	5965 5975 5995 6045 6190 6195 7180 7325 9410 9660 9740 9750 9760 11750 11775 11940
1300-1350	Radio Pyongyang, North Korea	12095 15070 15105 15140 15310 15420 17640 17705 17790 17885 21470 21660 21710 25750
1300-1400	S Radio Canada Int'l, Montreal	9325 9345 9645 13650 15180
1300-1400	ABC, Alice Springs, Australia	11955 17820 11720 2310
1300-1400	ABC, Brisbane, Australia	9660
1300-1400	ABC, Katherine, Australia	2485
1300-1400	ABC, Perth, Australia	9610
1300-1400	ABC, Tennant Creek, Australia	2325 (ML)
1300-1400	Adventist World Radio, Costa Rica	9725 11870
1300-1400	CBC Northern Quebec Service, Canada	6625
1300-1400	CBN, St. John's, Newfoundland	6160
1300-1400	CBU, Vancouver, British Columbia	6160
1300-1400	CFCF, Montreal, Quebec, Canada	6005
1300-1400	CFCN, Calgary, Alberta, Canada	6030
1300-1400	CHNS, Halifax, Nova Scotia, Canada	6130
1300-1400	Christian Science World Service	9495 9465 11930 15285
1300-1400	CKWX, Vancouver, British Columbia	6080
1300-1400	CFRB, Toronto, Ontario, Canada	6070
1300-1400	Radio Moscow World Service	11840 15475 17810 17700
1300-1400	FEBC Radio Int'l, Philippines	11850
1300-1400	HCJB, Quito, Ecuador	11740 15115 17890
1300-1400	KUSW, Salt Lake City, Utah	9850
1300-1400	Radio Australia, Melbourne	5995 11930 6080 6020 7205 9580 21525 6035
1300-1400	Radio Beijing, China	9530 11600 11660
1300-1400	Radio Bucharest, Romania	11940 15365 17850 21550

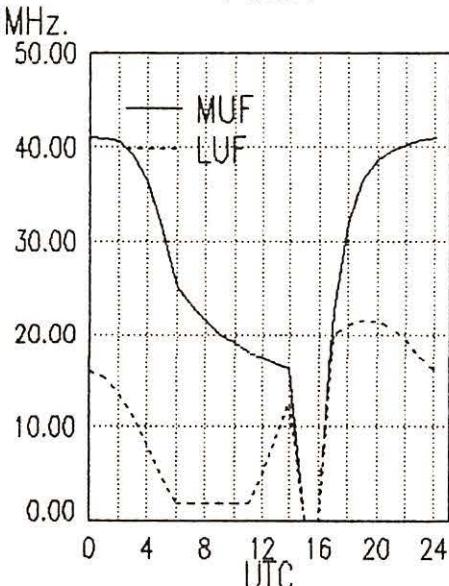


frequency

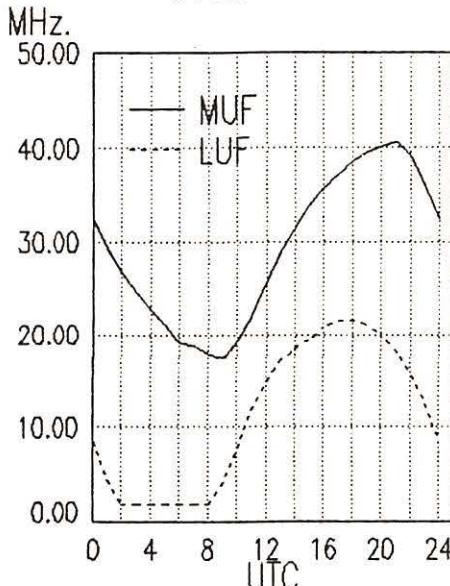
section

1300-1400	Radio Jordan, Amman	13655	1400-1430	S Radio Norway International, Oslo	21710
1300-1400	Radio Sta. Peace & Progress, Moscow	1870 15420 15330 15130 15320 17870 17880 17635 15535	1400-1430	Radio Polonia, Warsaw, Poland	6095 7285
1300-1400	Radio RSA, Johannesburg	17710 11805 21590	1400-1430	Radio Berlin International, GDR	9730
1300-1400	Voice of America-East Asia Service	6110 9760 11715 15155 15425	1400-1430	Radio Sweden, Stockholm	11905 17740
1300-1400	WHRI, Noblesville, Indiana	9465 11790	1400-1430	Radio Tirana, Albania	9500 11895
1300-1400	S WRNO Worldwide, Louisiana	9715	1400-1455	Radio Beijing, China	7405
1300-1400	WWCR, Nashville, Tennessee	15690	1400-1500	Radio SPLA (clandestine: Sudan)	11710 9550
1300-1400	WYFR, Okeechobee, Florida	17750 9705 11580 11830 13695 15215 17640 6015	1400-1500	ABC, Brisbane, Australia	9660
1330-1400	All India Radio, New Delhi	11760 9565	1400-1500	S Radio Canada Int'l, Montreal	11955 11720 17820
1330-1400	Radio Austria International, Vienna	15430	1400-1500	Voice of the Mediterranean, Malta	11925
1330-1345 A,S	Radio Finland, Helsinki	21550 15400	1400-1500	Radio Beijing, China	15165 11815 7405
1330-1400	Laotian National Radio	7116v	1400-1500	Radio Korea, Seoul	15575 9750 9570
1330-1400 A	Trans World Radio, Bonaire	11815 15345	1400-1500	ABC, Katherine, Australia	2485
1330-1400	Radio Tashkent, Uzbekistan	5945 9540 9600 11785 15470	1400-1500	ABC, Perth, Australia	9610
1330-1400	Swiss Radio International, Berne	9620 11695 13635 15570 17830 21695	1400-1500	All India Radio, New Delhi	11760 9565
1330-1400	UAE Radio, Dubai	15320 17775 21605	1400-1500	BBC World Service, London, England	5975 6045 6190 6195
1330-1400	Voice of Vietnam, Hanoi	9840 15010 12010	1400-1500	7325 9410 9660 9740	
1345-1350	Radio Prague, Czechoslovakia	9505 7345 6055	1400-1500	9750 9760 11750 11940	
1345-1400	Radio Berlin International, GDR	9730	1400-1500	12095 15070 15140 15310	
1345-1400	Voice of Eelam (clandestine: northern Sri Lanka)	7000	1400-1500	17640 17705 17790 17880	
1345-1400	BBC World Service, London, England	5975 5995 6045 6190 6195 7180 7325 9410 9660 9740 9750 9760 11750 11940 12095 15070 15140 15310 15420 17640 17705 17790 17885 21470 21660 21710 25750	1400-1500	21470 21660 21710 25750	
1400 UTC [10:00 AM EDT/7:00 AM PDT]					
1400-1415	Azad Kashmir Radio, Pakistan	7268 4980 3665	1400-1500	CBC Northern Quebec Service, Can	9625
1400-1420	Radio Jordan, Amman	13655	1400-1500	CBN, St. John's, Newfoundland	6160
1400-1430	ABC, Alice Springs, Australia	2310 (ML)	1400-1500	M-ACBU, Vancouver, British Columbia	6160
1400-1430	ABC, Tennant Creek, Australia	2325 (ML)	1400-1500	CFCF, Montreal, Quebec, Canada	6005
1400-1430	BBC English by Radio, London	11860 15420 17740	1400-1500	CFCN, Calgary, Alberta, Canada	6030
1400-1430	Radio Juba, Sudan	9540/9550	1400-1500	CHNS, Halifax, Nova Scotia, Canada	6130
1400-1430	Radio France International, Paris	11925 21780	1400-1500	Christian Science World Service	9530 15385 17555 21780
			1400-1500	CKWX, Vancouver, British Columbia	6080
			1400-1500	CFRB, Toronto, Ontario	6070
			1400-1500	FEBC Radio Int'l, Philippines	11850
			1400-1500	HCJB, Quito, Ecuador	11740 15115 17890
			1400-1500	KUSW, Salt Lake City, Utah	15590
			1400-1500	Radio Australia, Melbourne	5995 11930 6080 15485
			1400-1500	7205 9580	
			1400-1500	Radio Japan General Service, Tokyo	11865 11815
			1400-1500	Radio Moscow World Service	11840 15475 17810 21565
			1405-1430	12010 21740	
			1400-1500	Radio Finland, Helsinki	15185 21550 11820
			1400-1500	Radio RSA, Johannesburg	11925 21535 21590 25790
			1400-1500	Voice of America-East Asia Service	6110 9760 15155 15425
			1400-1500	Voice of America-South Asia Service	7125 9645 9760 15205
			1400-1500	15395	
			1400-1500	Voice of Nigeria, Lagos	7255
			1400-1500	WHRI, Noblesville, Indiana	9465 15105

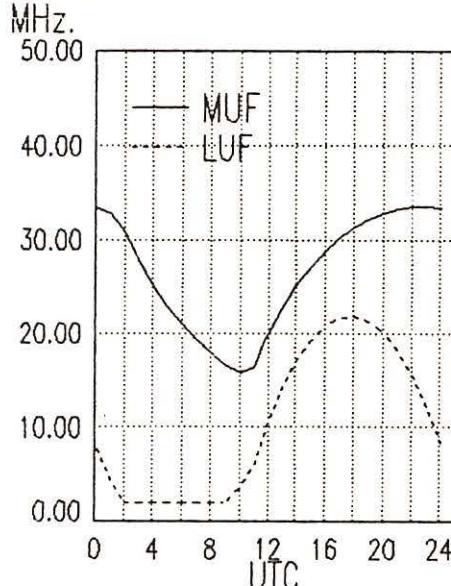
Midwest To
Pacific



Midwest To
South America



Midwest To
Central America



Midwest

frequency

section

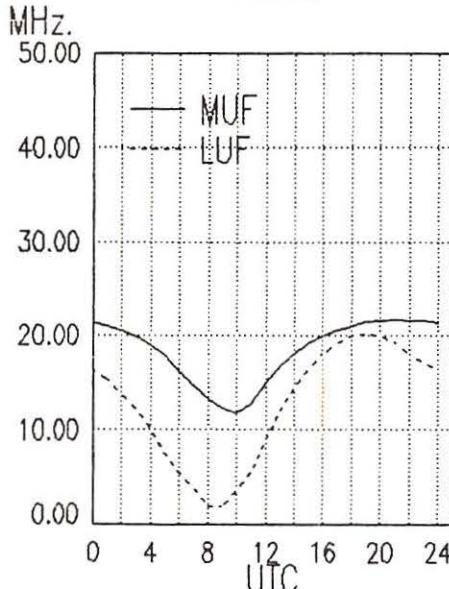
1400-1500	S	WRNO Worldwide, Louisiana	11965
1400-1500		WWCR, Nashville, Tennessee	15690
1400-1500		WYFR, Okeechobee, Florida	5950 6015 11580 13695
			17750
1405-1500		WYFR, Taiwan	11540
1415-1500	M-A	Radio Bhutan	5023v
1415-1425		Radio Nepal, Katmandu	5005 7165 (alt. 3230)
1430-1500		Radio Sofia, Bulgaria	11735 15310 15370 17825
1445-1500		Radio Berlin International, GDR	11970 17880
1445-1500		RCI European News Svc, Montreal	11935 15315 15325 17820
		{M-A add these: 15305 17795 21545}	
1430-1500		Voice of Hope, Lebanon	6280
1430-1500		Radio Australia, Melbourne	11930 9580 7205 6080
			6035 5995 15485
1430-1500		Voice of Myanmar (Burma)	5990v
1430-1500	F	ABC, Alice Springs, Australia	2310 (ML)
1430-1500	F	ABC, Tennant Creek, Australia	2325 (ML)
1430-1500		Radio Austria International, Vienna	6155 11780 13730 21490
1430-1500		Radio Netherlands Int'l, Hilversum	5955 13770 15150 17605
1430-1500		Radio Prague, Czechoslovakia	11685 13715 15110 15155
			17840 21505
1445-1500		Vatican Radio, Vatican City	6248 7250 9645 11740

1500 UTC [11:00 AM EDT/8:00 AM PDT]

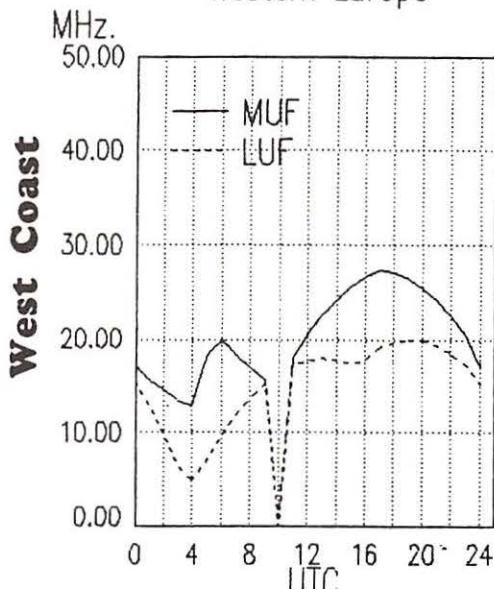
1500-1515		Vatican Radio, Vatican City	11955 15090 17870
1500-1515		WYFR, Taiwan	11550
1500-1525		Radio Netherlands Int'l, Hilversum	5955 13770 15150 17605
1500-1530		Radio Sofia, Bulgaria	11735 15310 15370 17825
1500-1530		Radio Sweden, Stockholm	11740 11905
1500-1530		Radio Romania Int'l, Bucharest	15335 11940 15250 17720
			17745
1500-1540		FEBA, Seychelles	11865
1500-1550		Radio Pyongyang, North Korea	11750 9977 9640 9325
1500-1550		Deutsche Welle, Koln, W. Germany	9735 11965 17765 21600
1500-1555		Radio Beijing, China	11815 15165
1500-1600		Radio Jordan, Amman	9560
1500-1600	S	Radio Canada Int'l, Montreal	11955 17820 11720
1500-1600		FEBA, Seychelles	15330 9590
1500-1600		Voice of Hope, Lebanon	6280
1500-1600	F	ABC, Alice Springs, Australia	2310 (ML)
1500-1600		ABC, Perth, Australia	9610
1500-1600	F	ABC, Tennant Creek, Australia	2325 (ML)

1500-1600		BBC World Service, London, England	3915 5995 6180 6190
			6195 7180 7325 9410
			9740 9750 9760 11775
			11750 11940 12095 15070
			15260 15310 15400 17640
			17705 17880 21470 21660
			21710 25750 17790
1500-1600		Voice of Myanmar (Burma)	5990v
1500-1600		CBC Northern Quebec Service, Can	9625 11720 (ML)
1500-1600		CBN, St. John's, Newfoundland	6160
1500-1600		CBU, Vancouver, British Columbia	6160
1500-1600		CFCF, Montreal, Quebec, Canada	6005
1500-1600		CFCN, Calgary, Alberta, Canada	6030
1500-1600		CHNS, Halifax, Nova Scotia, Canada	6130
1500-1600		Christian Science World Service	9530 15385 17555 21780
1500-1600		CKWX, Vancouver, British Columbia	6080
1500-1600		CFRB, Toronto, Ontario	6070
1500-1600		FEBC Radio Int'l, Philippines	11850
1500-1600		HCJB, Quito, Ecuador	15115 17890
1500-1600	T-S	KNLS, Anchor Point, Alaska	11715 (or 9750)
1500-1600		KTWR, Agana, Guam	11650
1500-1600		KUSW, Salt Lake City, Utah	15590
1500-1600		Radio Australia, Melbourne	5995 6035 15425 6080
			11930 7215 9580 15485
1500-1600	M-F	Radiodiffusion Nationale du Burundi	6140
1500-1600		Radio Japan General Service, Tokyo	11865 11815 21700
1500-1600		Radio Moscow World Service	11840 15475 17810 17585
			21565 21740
1500-1600		Radio RSA, Johannesburg S. Africa	11925 21535 21590 25790
1500-1600		Voice of America-Middle East Service	9700 15205 15260
1500-1600		Voice of America-South Asia Service	6110 7125 9645 9700
			9760 15205 15260 15395
1500-1600		Voice of Nigeria, Lagos	7255
1500-1600		WHRI, Noblesville, Indiana	15105 21840
1500-1600	S	WRNO Worldwide, Louisiana	11965
1500-1600		WWCR, Nashville, Tennessee	15690
1500-1600		WYFR, Okeechobee, Florida	5950 11830 13695 11580
			17750
1515-1530		KTWR, Agana, Guam	11650
1515-1530		Radio Budapest, Hungary	15160 15220 11910 9835
			9585 7220
1530-1540	M-A	Voice of Greece, Athens	11645 15630 17535
1530-1555	M-A	BR Brussels, Belgium	17580 21810
1530-1600		Radio Tirana, Albania	11835 9500

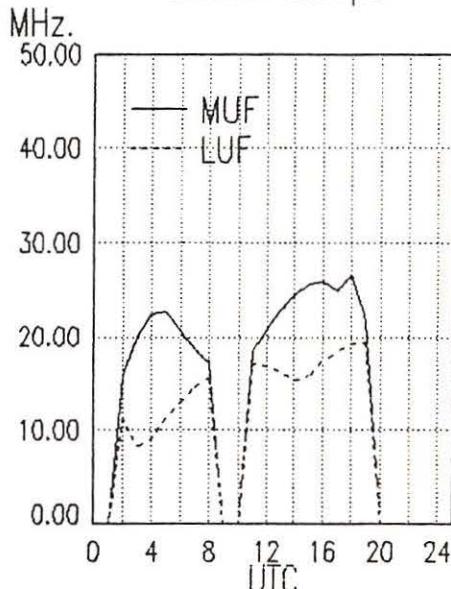
Midwest To
Alaska



West Coast To
Western Europe



West Coast To
Eastern Europe



frequency

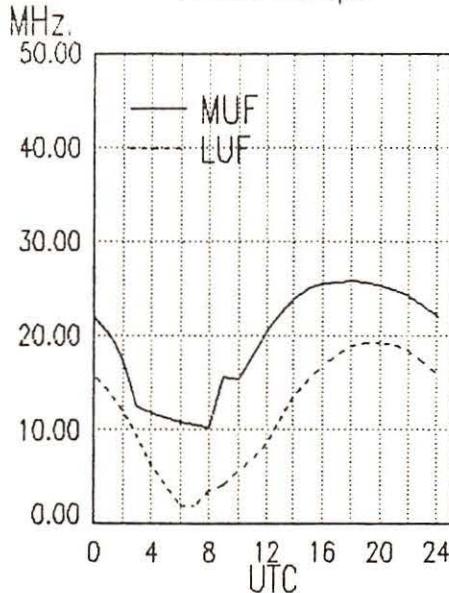
section

1530-1600	Radio Prague, Czechoslovakia	11990 13715 17840 21505 15155 15110 11685 7345 5930 17640	1600-1700	Radio Korea General Service, Seoul 5975 F ABC, Alice Springs, Australia 2310 (ML)
1530-1600	Radio Omdurman, Sudan	11635 9550/9540	1600-1700	ABC, Perth, Australia 9610
1530-1600	Radio Sweden, Stockholm	17880 21610 21655	1600-1700	F ABC, Tennant Creek, Australia 2325 (ML)
1530-1600	Swiss Radio International, Berne	3985 13685 17830 21630	1600-1700	CBC Northern Quebec Service, Can 9625 (ML)
1545-1600	Radio Berlin International, GDR	7295 9730 15350 17780	1600-1700	CBN, St. John's, Newfoundland 6160
1540-1555	S-F FEBA, Seychelles	11865	1600-1700	Radio Moscow World Service 11840 15475 17810 17585 21565 12050 12010 17685
1545-1600	BBC English by Radio, London	9635 11945	1600-1700	CBU, Vancouver, British Columbia 6160
1545-1600	Radio Pakistan	21740 21480 17895 17580	1600-1700	CFCF, Montreal, Quebec, Canada 6005
1545-1600	Vatican Radio, Vatican City	15605 13665	1600-1700	CFCN, Calgary, Alberta, Canada 6030
1555-1600	M,A FEBA, Seychelles	15120 17730 21650 11865	1600-1700	CHNS, Halifax, Nova Scotia, Canada 6130

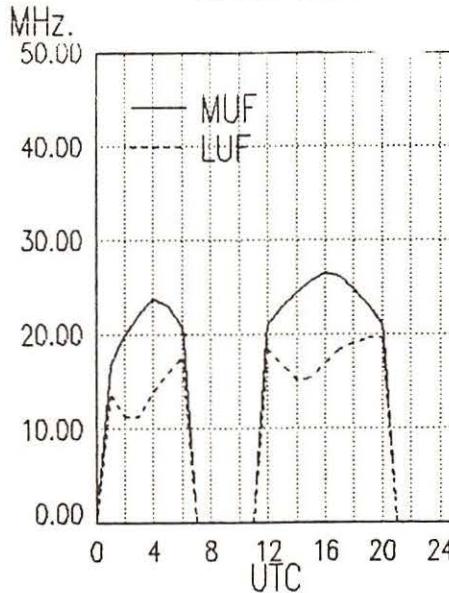
1600 UTC [12:00 PM EDT/9:00 AM PDT]

1600-1610	M,A FEBA, Mahe, Seychelles	11865	1600-1700	Christian Science World Service 15385 21640 13745
1600-1610	Vatican Radio, Vatican City	6248 7250 9645 11740	1600-1700	CKWX, Vancouver, British Columbia 6080
1600-1615	Azad Kashmir Radio, Pakistan	7268 4980 3665	1600-1700	CFRB, Toronto, Ontario 6070
1600-1615	BBC World Service, London, England	3915 5975 5995 6180 6190 6195 7180 7325	1600-1700	HCJB, Quito, Ecuador 15115 17890
		9410 11775 9740 9750	1600-1700	KTWR, Agana, Guam 11650 11910 13720
		9760 11750 11940 12095	1600-1700	KUSW, Salt Lake City, Utah 15590
		15070 15260 15310 15400	1600-1700	Radio Beijing, China 9570 15110 15130 13740 9710
		17640 17705 17860 17880	1600-1700	Radio France International, Paris 6175 11705 12015 15360 17620 17795 17850
1600-1625	Radio Prague, Czechoslovakia	21505 17840 17640 15155 15110 13715 11990 11685	1600-1700	Radio Jordan, Amman 9560
		7345 5930	1600-1700	Radio Korea, Seoul, South Korea 5975
1600-1630	Radio Pakistan, Dacca	17580 13665 15605 21740 17895 21480	1600-1700	Trans World Radio-Swaziland 15210
		17765 21705	1600-1700	Voice of America-Africa Service 7195 9575 11920 15410 15445 15580 15600 17785
1600-1630	S Radio Norway International, Oslo	6135 9540	1600-1700	17800 17870
1600-1630	Radio Polonia, Warsaw, Poland	15210	1600-1700	Voice of America-Middle East Service 3980 9700 15205 15260
1600-1630	Radio Portugal, Lisbon	11930 6035 6020 6080	1600-1700	Voice of America-Asia Service 7125 9645 9700 9760
1600-1630	Radio Australia, Melbourne	7205 7215 9580 15485	1600-1700	15205 15260 15395
		17612 21525 21615 11580	1600-1700	Voice of Nigeria, Lagos 7255
1600-1630	Radio Berlin International, GDR	17780 15350 9730 7295	1600-1700	WHRI, Noblesville, Indiana 15105 21840
1600-1630	Voice of Vietnam, Hanoi	9840 15010 12010	1600-1700	WINB, Red Lion, Pennsylvania 15295
1600-1640	UAE Radio, Dubai	11790 15320 21605 15300	1600-1700	WRNO New Orleans, Louisiana 15420
1600-1650	Radio Pyongyang, North Korea	9325 11760	1600-1700	WWCR, Nashville, Tennessee 15690
1600-1650	Deutsche Welle, Kolin, W. Germany	6170 7225 15105 15595	1600-1700	WYFR, Okeechobee, Florida 11830 13695 17750 15566
1600-1700	KSDA, Guam	17825 21680 11980	1600-1700	RCI European News Svc, Montreal 11935 15305 15325 17820 21545
			1615-1620	Vatican Radio, Vatican City 9645 11740
			1615-1630	BBC Africa Service, London 6005 6190 9595 11940
			1615-1630	15400 17880
			1615-1630	BBC English by Radio, London 3975 6125 9750
			1615-1700	BBC World Service, London, England 3915 5975 6180 6195 7325 9410 9740 11775

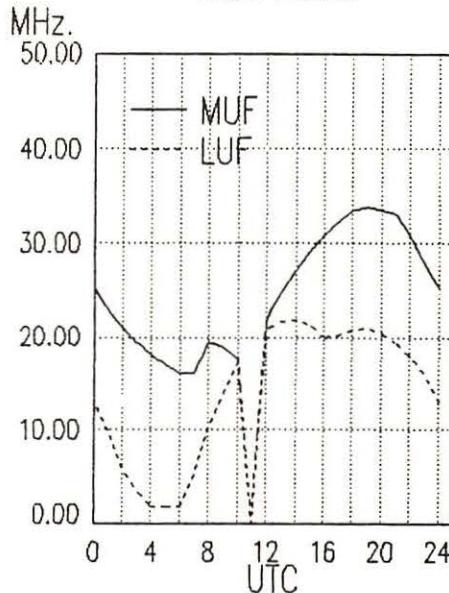
West Coast To Arctic Europe



West Coast To Middle East



West Coast To West Africa



West Coast

frequency

section

1630-1655	BRT Brussels, Belgium	11695 5910	12095 15070 15260 15310	1700-1800	KUSW, Salt Lake City, Utah	15590
1630-1655	Radio Austria International, Vienna	13730 12010 6155 5945	17640 17695 17860 21470	1700-1800	Radio Australia, Melbourne	11930 6035 6020 6080
1630-1700	Radio Australia, Melbourne	13740 9710 9580 11930	21660 21710			7205 7215 9580 15245
		6035 6020 6080 7205				13720 9710 6060
1630-1700	Radio Netherlands Int'l, Hilversum	15375 15570	7215		Radio Japan General Service, Tokyo	15140 11865 11815
1630-1700	RAE, Buenos Aires, Argentina	11710 15345				9695 9535
1630-1700	Radio Sta. Peace & Progress, Moscow	6320 11850 11980 17565			Radio Jordan, Amman	9560
		12065 11910 15585 9705			Voice of America-Africa Service	7195 9575 11920 15410
1630-1700	Radio Austria International, Vienna	11780 13730 21490				15445 15580 15600 17785
						17800 17870

1700 UTC [1:00 PM EDT/10:00 AM PDT]

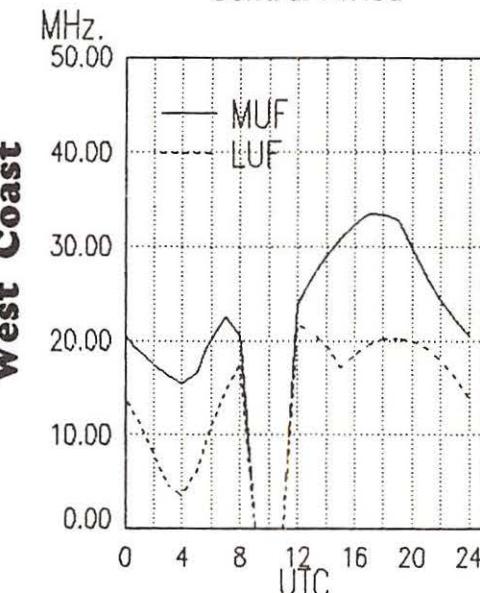
1700-1705	KTWR, Agana, Guam	11650				
1700-1715	BBC English by Radio, London	6065 7105 9605 11750				
1700-1715	Swiss Radio Int'l Europe Service(MO)	3985 6165 9535				
1700-1715	Kol Israel, Jerusalem	11585 11655				
1700-1725	Radio Netherlands Int'l, Hilversum	15375 15570				
1700-1730	BBC English by Radio, London	3975 6125 7155				
1700-1730 S	Radio Norway International, Oslo	25730 17765				
1700-1730	RAE, Buenos Aires, Argentina	11710 15345				
1700-1745	BBC World Service, London, England	3915 5975 6180 6195				
		7160 7325 9410 11775				
		9740 12095 15070 15260				
		15310 17640 17695 21470				
		21660 21710				
1700-1750	Radio Pyongyang, North Korea	11750 9977 9640 9325				
1700-1800 F	ABC, Alice Springs, Australia	2310 (ML)				
1700-1800	ABC, Tennant Creek, Australia	2325 (ML)				
1700-1800	CBN, St. John's, Newfoundland	6160				
1700-1800	CBU, Vancouver, British Columbia	6160				
1700-1800	CFCF, Montreal, Quebec, Canada	6005				
1700-1800	CFCN, Calgary, Alberta, Canada	6030				
1700-1800	Radio Moscow World Service	11840 15475 17810 17586				
		21565 21740 12050				
1700-1800	Radio New Zealand, Wellington	17680				
1700-1800	CHNS, Halifax, Nova Scotia, Canada	6130				
1700-1800	Christian Science World Service	15385 21640 13745				
1700-1800	CKWX, Vancouver, British Columbia	6080				
1700-1800	CFRB, Toronto, Ontario	6070				
1700-1800 S-F	WMLK Bethel, Pennsylvania	9465				

1700-1800	KUSW, Salt Lake City, Utah	15590
1700-1800	Radio Australia, Melbourne	11930 6035 6020 6080
		7205 7215 9580 15245
		13720 9710 6060
1700-1800	Radio Japan General Service, Tokyo	15140 11865 11815
		9695 9535
1700-1800	Radio Jordan, Amman	9560
1700-1800	Voice of America-Africa Service	7195 9575 11920 15410
		15445 15580 15600 17785
		17800 17870
1700-1800	Voice of America-Middle East Service	3980 6040 9700 9760
		11760 15205 15260
1700-1800	Voice of America-South Asia Service	7125 9645 9700 15395
1700-1800	WHRI, Noblesville, Indiana	13760 15105
1700-1800	WINB, Red Lion, Pennsylvania	15295
1700-1800	WRNO, New Orleans, Louisiana	15420
1700-1800	WWCR, Nashville, Tennessee	15690
1700-1800	WYFR, Okeechobee, Florida	11830 13695 11580
		17750 17885
1709-1745	BBC Africa Service, London, England	6005 6190 9595 11940
		15400 17880
1715-1800	Radio Pakistan	11570 9815
1730-1740	Radio Bayrak, Northern Cyprus	6150
1730-1755	BRT Brussels, Belgium	5910 11695 13675
1730-1800	Radio Sofia, Bulgaria	11735 11840 15370
1730-1800	Radio Berlin International, GDR	9665 13610 15145 15350
		17755
1730-1800	Vatican Radio African Service	21650 17710 17730
1730-1800	Radio Romania Int'l, Bucharest	15340 15365 17720 11940
1730-1800	Radio Prague, Czechoslovakia	9605 11685 11990 13715
		15110 17840 21505
1745-1800	BBC World Service, London, England	5975 6180 6195 7160
		7325 9410 9740 12095
		15070 15310 15400 17640
		17695 17880

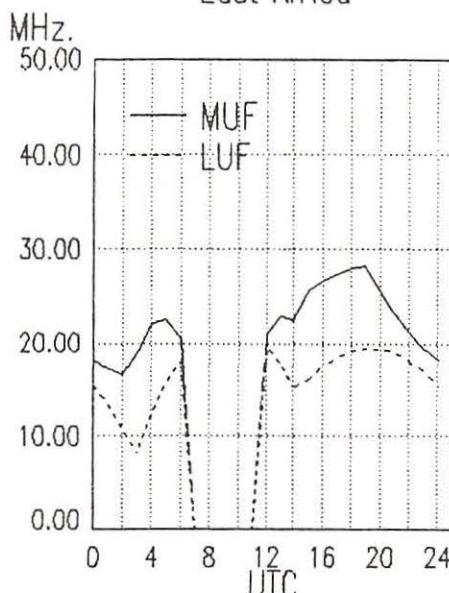
1800 UTC [2:00 PM EDT/11:00 AM PDT]

1800-1815	Radio Berlin International, GDR	17755 15350 15145 13610
		9665
1800-1825	Radio Prague, Czechoslovakia	21505 17840 15110 13715
		11990 11685 9605
1800-1830	M-F Radio Budapest, Hungary	15160 11910 9835 9585
		7220 6110

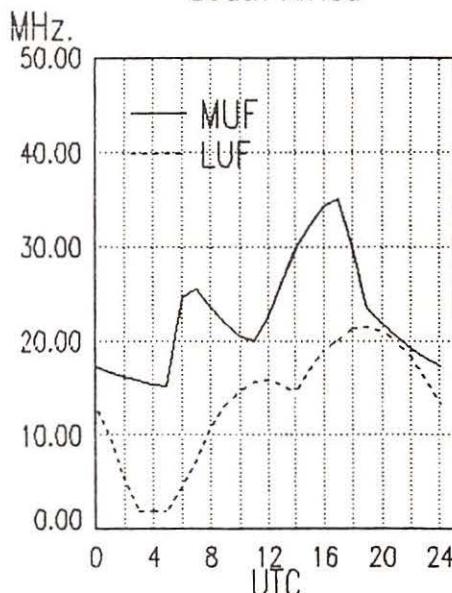
West Coast To Central Africa



West Coast To East Africa



West Coast To South Africa

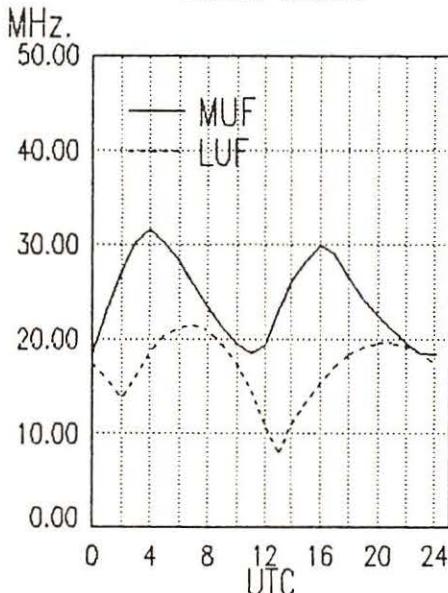


frequency

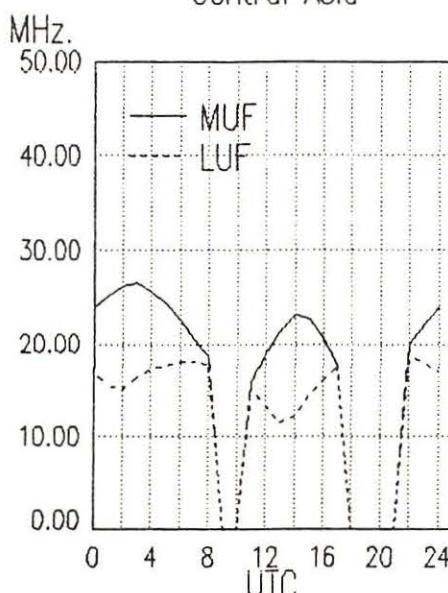
section

1800-1830	Radio Canada Int'l, Montreal	13670 15260 17820	1800-1900	Voice of America-Middle East Service	6040 9700 9760 11760
1800-1830	Radio Kiev, The Ukraine	6010 6090 6165 7115	1800-1900	WHRI, Noblesville, Indiana	15205
1800-1830	BBC World Service, London	3255 3955 5975 6180	1800-1900	WINB, Red Lion, Pennsylvania	13760 17830
		6190 6195 7160 7325	1800-1900	WRNO, New Orleans, Louisiana	15295
		9410 9740 11750 12095	1800-1900	WWCR, Nashville, Tennessee	15420
		15070 15310 15400 17640	1800-1900	WYFR, Okeechobee, Florida	15690
		17695 17880	1800-1900		11830 13695 11580 17750
		15165	1815-1900	Radio Bangladesh, Dhaka	17885
1800-1830	S Radio Norway International, Oslo	9660	1830-1845	Radio Finland, Helsinki	15255 11705
1800-1830	Voice of Ethiopia, Addis Ababa	6065 7265	1830-1855	Radio Polonia, Warsaw, Poland	11755 9550 6120
1800-1830	Radio Sweden, Stockholm	11930 6035 6020 6080	1830-1900		5995 6135 7125 7285
1800-1830	Radio Australia, Melbourne	7205 7215 9580 13740	1830-1900		9525 11840
1800-1830	Voice of Vietnam, Hanoi	15010 12010 9840	1830-1900 A,S	Radio Budapest, Hungary	6110 7220 9585 9835
1800-1830	Radio Prague, Czechoslovakia	7345 5930	1830-1900	Radio Yugoslavia, Belgrade	11910 15160
1800-1830	Voice of Vietnam, Hanoi	12020 15010 9840	1830-1900	Radio Riyadh, Saudi Arabia	11735 7215 5980
1800-1845	Trans World Radio, Swaziland	15210	1830-1900	Radio Australia, Melbourne	9705 9720
1800-1845	All India Radio, New Delhi	11935 15360	1830-1900		11930 9580 7215 7205
1800-1850	Radio Bras, Brasilia, Brasil	15265	1830-1900 A,S	Radio Canada Int'l, Montreal	6080 6035 6020 5995
1800-1855	Radio Mozambique, Maputo	9618 4855 3265	1830-1900 M-F	Radio Canada Int'l, Montreal	13670 15260 17820
1800-1900	F ABC, Alice Springs, Australia	2310 (ML)	1830-1900		21675 17875 15325 7235
1800-1900	F ABC, Tennant Creek, Australia	2325 (ML)	1830-1900		5995
1800-1900	Radio Korea, Seoul	15575	1830-1900	Radio Afghanistan, Kabul	9635 7215 6020 15440
1800-1900	KVOH, Rancho Simi, California	17775	1830-1900	Radio Tirana, Albania	11830
1800-1900	Radio Moscow World Service	11840 17585 15475 21565	1830-1900	BBC Africa Service, London	7120 9480
		21740	1830-1900		3255 6005 6190 9630
1800-1900	Radio New Zealand, Wellington	17730 17680a 15485a	1830-1900	BBC World Service, London, England	15400 17880
1800-1900	CBN, St. John's, Newfoundland	6160	1830-1900		6180 6195 7325
1800-1900	CBU, Vancouver, British Columbia	6160	1830-1900		9410 11750 12095 15070
1800-1900	CFCF, Montreal, Quebec, Canada	6005	1830-1900	Radio Netherlands Int'l, Hilversum	17755
1800-1900	CFCN, Calgary, Alberta, Canada	6030	1830-1900	Swiss Radio International, Berne	6020 15560 17605 21685
1800-1900	CHNS, Halifax, Nova Scotia, Canada	6130	1830-1900	Swiss Radio Int'l European Service	9885 11955
1800-1900	Christian Science World Service	9455 21780 21640 17555	1840-1850	Radio Netherlands Int'l, Hilversum	3985 6165 9535
1800-1900	CKWX, Vancouver, British Columbia	6080	1840-1850	M-A Voice of Greece, Athens	11645 12105 15630
1800-1900	CFRB, Toronto, Ontario	6070	1845-1855	IRR RTV Guineenne, Conakry, Guinea	4702 7125v
1800-1900	KUSW, Salt Lake City, Utah	15590	1845-1900	GBC Radio, Accra, Ghana	6130
1800-1900	Radio Jordan, Amman	9560	1845-1900	All India Radio, New Delhi	15360 11935 11620 9550
1800-1900	Radio Kuwait, Safat, Kuwait	13610	1850-1855	Africa No. 1, Gabon	7412
1800-1900	CBC Montreal	9625	1850-1855		15475
1800-1900	S-F WMLK Bethel, Pennsylvania	9465			
1800-1900	Radio RSA, Johannesburg, S. Africa	21535 15230 7230			
1800-1900	A,S Radio for Peace Int'l, Costa Rica	13660 21566			
1800-1900	Voice of America-Africa Service	7195 9575 11920 15410			
		15445 15580 15600 17785			
		17800 17870 21485			
			1900-1915	Sierra Leone Brdcstng Co., Freetown	3316
			1900-1920v	Radio Omdurman, Sudan	11635
			1900-1925	Radio Netherlands Int'l, Hilversum	6020 15560 17605 21685

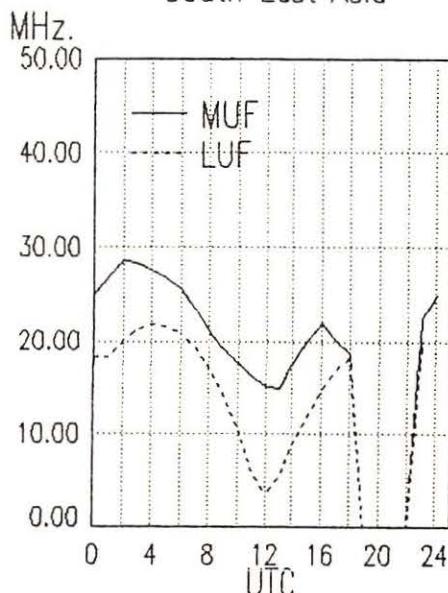
West Coast To
Indian Ocean



West Coast To
Central Asia



West Coast To
South East Asia



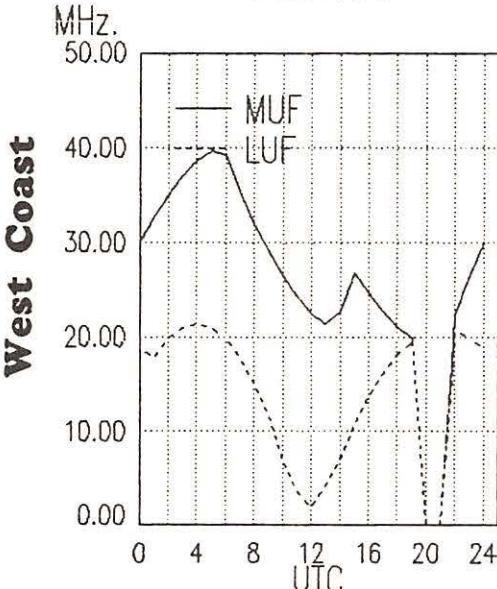
West Coast

frequency

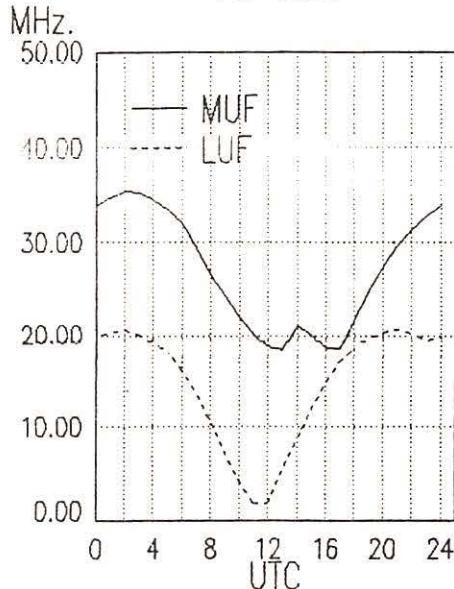
section

1900-1930	Radio Afghanistan, Kabul	9635 7215 6020 15440	1900-2000	Voice of America-Africa Service	7195 15410 15445 15580
		11830			15600 17785 17800 17870
1900-1930	M-F Radio Canada Int'l, Montreal	13670 15260 17820			21485
1900-1930	Radio Japan General Service, Tokyo	11865 11850 15270	1900-2000	Voice of America-Middle East Service	6040 9700 9760 11760
1900-1930	S Radio Norway International, Oslo	15165			15205
1900-1930	M-F Radio Portugal, Lisbon	11740 15250 21530	1900-2000	Voice of America-Pacific Service	9525 11870 15180
1900-1930	Voice of Vietnam, Hanoi	9840 15010 12010	1900-2000	WHRI, Noblesville, Indiana	13760 17830
1900-1930	Kol Israel, Jerusalem	15640 11605 17630 15485	1900-2000	WINB, Red Lion, Pennsylvania	15295
		17590 12077	1900-2000	WMLK, Bethel, Pennsylvania	9465
1900-1945	All India Radio, New Delhi	7412 11620 11935 15360	1900-2000	WRNO, New Orleans, Louisiana	15420
		9550	1900-2000	WWCR, Nashville, Tennessee	15690
1900-1950	Deutsche Welle, Kohn, W. Germany	11785 11810 13790 15390	1900-2000	WYFR, Okeechobee, Florida	11830 13695 11580 15566
		17810			17885 21615 17612
1900-2000	CBC, Montreal	9625	1915-2000	Radio Berlin International, GDR	15350 13610 9665
1900-2000	Radio New Zealand, Wellington	17680	1920-1930	M-A Voice of Greece, Athens	7430 9395 9425
1900-2000	Radio Moscow British Service	9685 9740 9600 9450	1930-2000	M Radio Tallin, Estonia	5925
1900-2000	Radio Moscow World Service	17585 11840 21565 21740	1930-2000	Radio Austria International, Vienna	5945 6155 12010 13730
		11655	1930-2000	Radio Bucharest, Romania	9690 7195 6105 7105
1900-2000	Solomon Islands Broadcasting Co.	5020	1935-1955	Voice of the Islamic Republic Iran	9022 11895
1900-2000	KVOH, Rancho Simi, California	17775	1945-2000	RAI, Rome, Italy	7275 9710 11800
1900-2000	BBC World Service, London, England	3255 3955 6005 6180	1945-2000	Radio Berlin International, GDR	6115
		6190 6195 7160 7325		All India Radio, New Delhi	15360 11935 9550
		9410 9630 11750 12095			
		15070 15140 15400 17880			
1900-2000	CBN, St. John's, Newfoundland	6160			
1900-2000	CBU, Vancouver, British Columbia	6160			
1900-2000	CFCF, Montreal, Quebec, Canada	6005			
1900-2000	CFCN, Calgary, Alberta, Canada	6030			
1900-2000	CHNS, Halifax, Nova Scotia, Canada	6130			
1900-2000	Christian Science World Service	9455 21780 21640 17555			
1900-2000	CKWX, Vancouver, British Columbia	6080			
1900-2000	CFRB, Toronto, Ontario	6070			
1900-2000	GBC Radio, Accra, Ghana	6130			
1900-2000	HJCB European Service, Ecuador	17790 15270 21470			
1900-2000	KUSW, Salt Lake City, Utah	15590			
1900-2000	Radio Algiers, Alger	9535 15215			
1900-2000	Radio Australia, Melbourne	6035 11930 6080 7205			
		7215 9580 6020			
1900-2000	Radio Havana Cuba	11800	2000-2030	M-F Radio Portugal	15250
1900-2000	Radio Jordan, Amman	9560	2000-2030	Radio Berlin International, GDR	6115 9665 13610 15340
1900-2000	Radio Kuwait, Safat, Kuwait	13610	2000-2030	M Radio Ljubljana, Yugoslavia	5980 7240 9620
1900-2000	A,S Radio for Peace Int'l, Costa Rica	13660 21566	2000-2030	Radio Budapest, Hungary	11910 15160 9835 9585
1900-2000	Radio RSA, Johannesburg, S. Africa	15230 17765	2000-2030	Radio Australia, Melbourne	7220 6110
1900-2000	Spanish National Radio, Madrid	15280 15375 15395	2000-2030	Radio Romania Int'l, Bucharest	6035 7205 7215 9580
1900-2000	Radio Prague, Czechoslovakia	7345 5930	2000-2030	Voice of the Islamic Republic Iran	9620 6020
			2000-2050	Radio Pyongyang, North Korea	9690 7105 7105 6105
			2000-2100	Radio for Peace Int'l, Costa Rica	6576 9345 9977 9640
					21566 13660

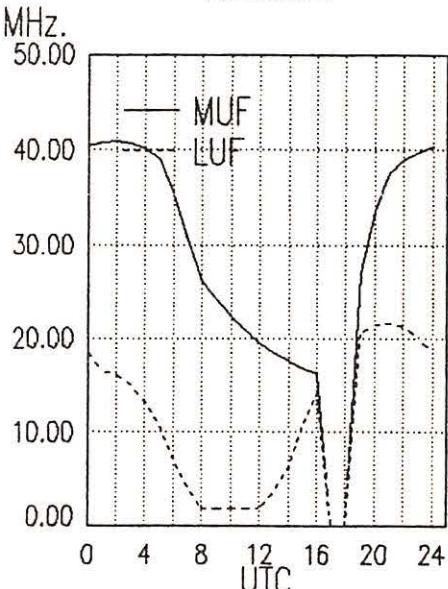
West Coast To
Indonesia



West Coast To
Far East



West Coast To
Australia

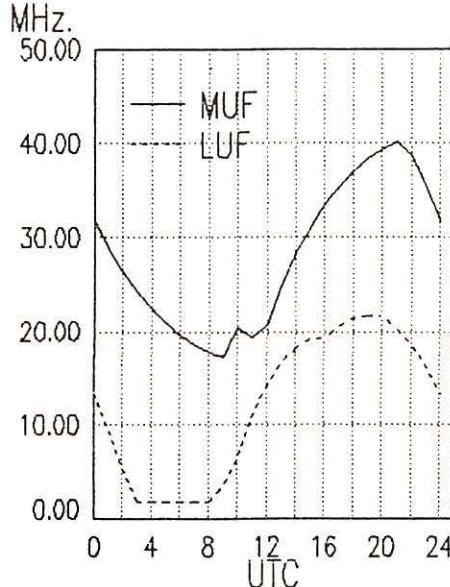


frequency

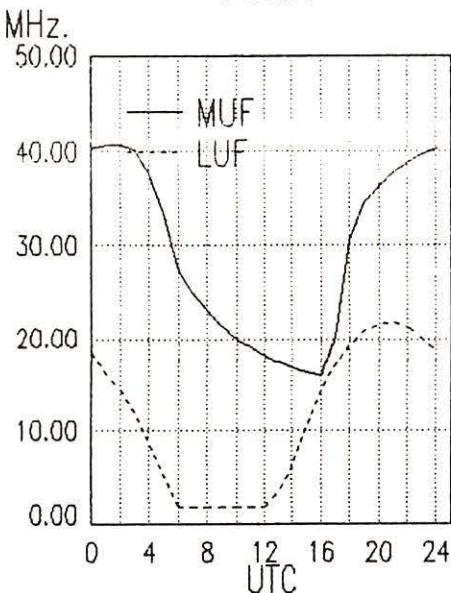
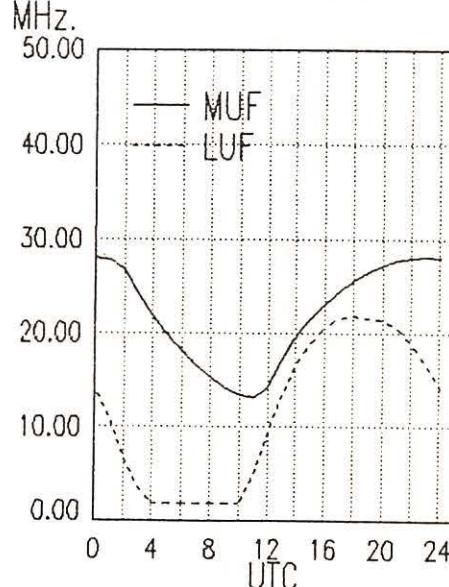
section

2000-2100	Voice of Hope, Lebanon	6280	2030-2100	Radio Australia, Melbourne	9620	6020
2000-2100	All India Radio, New Delhi	9950 11860 15360	2030-2100	Radio Sofia, Bulgaria	11660	15330 9700
2000-2100	M-AABC, Alice Springs, Australia	2310 (ML)	2030-2100	Radio Africa, Equatorial Guinea	7190	
2000-2100	ABC, Katherine, Australia	2485	2030-2100	Radio Korea, Seoul	7550	6480 15575
2000-2100	M-AABC, Tennant Creek, Australia	2325 (ML)	2030-2100	Radio Netherlands Int'l, Hilversum	9860	13700 15560
2000-2100	CBN, St. John's, Newfoundland	6160	2030-2100	Voice of Vietnam, Hanoi	12020	15010 9840
2000-2100	CBU, Vancouver, British Columbia	6160	2040-2048	M-A Voice of Greece, Athens	9425	11645 9395
2000-2100	CFCF, Montreal, Quebec, Canada	6005	2045-2100	Radio Berlin International, GDR	6115	
2000-2100	Radio Moscow World Service	9685 11655 17585 21565	2045-2100	All India Radio, New Delhi	7412	9550 9910 11620
		11950 9600 9740			11715	7265
2000-2100	Voice of Turkey, Ankara	9795	2045-2100	IBRA Radio, Malta	7110	7225
2000-2100	CFCN, Calgary, Alberta, Canada	6030	2045-2100	Vatican Radio, Vatican City	9625	11700 11760 15120
2000-2100	CHNS, Halifax, Nova Scotia, Canada	6130	2050-2100	Vatican Radio, Vatican City	6190	7250 9645
2000-2100	Christian Science World Service	9455 13770 15610 17555				
		15265				
2000-2100	CKWX, Vancouver, British Columbia	6080	2100 UTC [5:00 PM EDT/2:00 PM PDT]			
2000-2100	CFRB, Toronto, Ontario	6070				
2000-2100	KUSW, Salt Lake City, Utah	15590	2100-2105	Radio Damascus, Syria	9950	15095
2000-2100	Radio Beijing, China	11500 9920 15110	2100-2110	Vatican Radio, Vatican City	6190	7250 9645
2000-2100	Radio Havana Cuba	11800	2100-2115	BBC World Service, London, England	3955	5975 6005 6180
2000-2100	Radio Kuwait, Safat, Kuwait	13610			6195	7325 9410 11750
2000-2100	Radio Jordan, Amman	9560			12095	15070 15140 15260
2000-2100	Voice of America-Africa Service	7195 15410 15445 15580			15400	17715 17760 17880
		15600 17785 17800 17870			17755	
		21485	2100-2115	IBRA Radio, Malta	7225	
2000-2100	Voice of America-Middle East Service	6040 9700 9760 11760	2100-2125	Radio Netherlands Int'l, Hilversum	9860	13700 15560
		15205	2100-2130	Vatican Radio African Service	17730	17710 21650
2000-2100	WHR, Noblesville, Indiana	13760 17830	2100-2130	Sierra Leone Brdcsng Co., Freetown	3316	
2000-2100	WINB, Red Lion, Pennsylvania	15185	2100-2130	Radio Korea, Seoul	15575	7550 6480
2000-2100	WRNO, New Orleans, Louisiana	15420	2100-2130	Radio Romania Int'l, Bucharest	9690	7195 7105 6105
2000-2100	KVOH, Rancho Simi, California	17775			5990	
2000-2100	Radio Moscow Africa Service	11850 7360	2100-2130	BRT Brussels, Belgium	5910	9925
2000-2100	Solomon Islands Broadcasting Co.	5020	2100-2130	Radio Japan General Service, Tokyo	17890	17810 15270 15230
2000-2100	WWCR, Nashville, Tennessee	15690			11835	11815
2000-2100	WYFR, Okeechobee, Florida	11580 11830 13695 15215	2100-2130	Radio Sweden, Stockholm	9655	11705
		15566 17612 21615	2100-2130	Swiss Radio International, Berne	9885	13635 15525 12035
		21525	2100-2130	Radio Finland, Helsinki	6120	11755 15400
2005-2100	Radio New Zealand, Wellington	17680	2100-2145	Radio Berlin International, GDR	9730	
2005-2100	Radio Damascus, Syria	9950 15095	2100-2145	Radio Yugoslavia, Belgrade	11735	9660 9620 7215
2025-2045	RAI, Rome, Italy	7235 9575 11800	2100-2150	Deutsche Welle, Köln, West Germany	9670	11810 9765 13780
2030-2100	BBC World Service, London, England	3955 5975 6005 6180			15435	
		6195 7180 7325 9410	2100-2200	Radio Canada Int'l, Montreal	15325	17875
		11715 11750 12095 15070	2100-2200	All India Radio, New Delhi	11715	11620 9910 9550
		15140 15260 15400 17760	2100-2200	Radio New Zealand, Wellington	7412	7265
		17880			17680	

West Coast To
South America



West Coast To
Central America

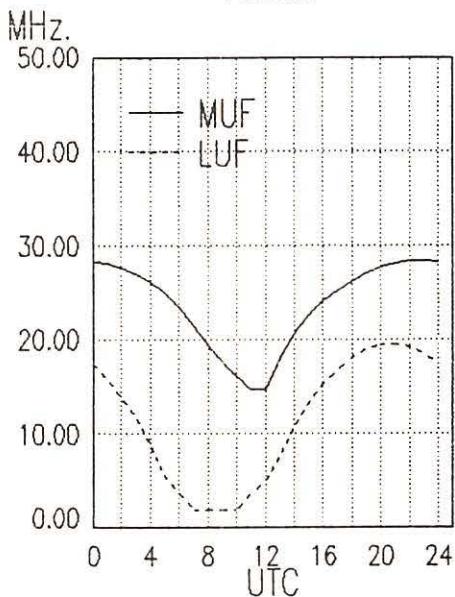


frequency

section

2100-2200	Radio Moscow World Service	9685 15180 11655 11840
		11950 9600 9740 11850
2100-2200	CBN, St. John's, Newfoundland	6160
2100-2200	CBU, Vancouver, British Columbia	6160
2100-2200	Voice of Hope, Lebanon	6280
2100-2200	CFCF, Montreal, Quebec, Canada	6005
2100-2200	CFCN, Calgary, Alberta, Canada	6030
2100-2200	CHNS, Halifax, Nova Scotia, Canada	6130
2100-2200	Christian Science World Service	9455 13770 15610 17555
		15265
2100-2200	Radio Moscow Africa Service	7360 11850
2100-2200	Solomon Islands Broadcasting Co.	5020 9545
2100-2200	CKWX, Vancouver, British Columbia	6080
2100-2200	CFRB, Toronto, Ontario	6070
2100-2200	KUSW, Salt Lake City, Utah	15590
2100-2200	Radio Australia, Melbourne	17795 9620 15160
2100-2200	KVOH, Rancho Simi, California	17775
2100-2200	Radio Baghdad, Iraq	13660
2100-2200	Radio Beijing, China	11500 9920
2100-2200	Radio Jordan, Amman	9560
2100-2200	Radio for Peace, Costa Rica	21566 13660
2100-2200	RAE, Buenos Aires, Argentina	11710 15345
2100-2200	Voice of America-Africa Service	7195 15410 15445 15580
		15600 17785 17800 17870
		21485
2100-2200	Voice of America-Middle East Service	6040 9700 9760 11760
		15205 11710
2100-2200	Voice of America-Pacific Service	11870 15185 17735
2100-2200	WHRI, Noblesville, Indiana	13760 17830
2100-2200	WINB, Red Lion, Pennsylvania	15185
2100-2200	WRNO Worldwide, Louisiana	13720
2100-2200	WWCR, Nashville, Tennessee	15690
2100-2200	WYFR, Okeechobee, Florida	11580 11830 13695 17885
		15566 17612 21615 21525
2110-2200	Radio Damascus, Syria	15095 12085
2115-2130	M-F BBC Caribbean Service, London	5975 15400 17715
2115-2130	BBC World Service, London, England	3955 6005 6195 7180
		7325 9410 11715 11750
		12095 15140 15260 17755
		15070
2130-2145	BBC English by Radio, London	11945 15280
2130-2200	BBC World Service, London, England	3955 5975 6005 6195
		7325 9410 11750 12095
		15140 15260 17755 15070

West Coast To
Alaska



West Coast

2130-2200	Kol Israel, Jerusalem	15640 12077 11605 17575
		17630
2130-2200	Radio Sofia, Bulgaria	15330 11680
2130-2200	Radio Vilnius, Lithuania	6100 9675 666
2130-2200	Radio Canada Int'l, Montreal	11880 15150 17820
2130-2200	BBC English by Radio, London	6125 7125 9635
2130-2200	T-F BBC Falkland Islands Service, London	9915
2130-2200	HCJB, Quito, Ecuador	15270 17790
2145-2200	Radio Berlin International, GDR	5965 9730 13690
2200 UTC [6:00 PM EDT/3:00 PM PDT]		
2200-2205	Radio Damascus, Syria	15095 12085
2200-2215	Sierra Leone Brdcstng Co., Freetown	3316
2200-2215	M-AABC, Alice Springs, Australia	2310 (ML)
2200-2215	ABC, Tennant Creek, Australia	2325 (ML)
2200-2215	BBC English by Radio, London	11945 15280
2200-2215	M-F Voice of America-Caribbean Service	9640 11880 15225
2200-2225	RAI, Rome, Italy	5990 7235 9710
2200-2230	Radio Beijing, China	3985
2200-2230	Radio Berlin International, GDR	5965 9730 13690
2200-2230	Radio Vilnius, Lithuania	11770 12060 6100 15180
2200-2230	Radio Prague, Czechoslovakia	17665 17690 666
2200-2230	ABC, Katherine, Australia	6055
2200-2230		2485
2200-2230	Radio Canada Int'l, Montreal	11715 7265
2200-2230	Radio Sofia, Bulgaria	11705 11905 9755 5960
2200-2230	S KGEI, San Francisco, California	15280
2200-2230	S Radio Norway International, Oslo	15180
2200-2245	All India Radio, New Delhi	7412 9550 9910 11620
2200-2250	Radio Baghdad, Iraq	13660
2200-2300	BBC World Service, London, England	3915 3955 5975 6005
		6175 6195 7325 9410
		9570 9590 9595 9915
		11750 11955 12095 15140
		15260 15400 15070 17750
2200-2300	CBC Northern Quebec Svc, Canada	9625
2200-2300	CBN, St. John's, Newfoundland	6160
2200-2300	Radio Korea, Seoul	15575
2200-2300	Radio Moscow North American Svc	9530 9720 11750 11950
		9685 11735
2200-2300	Radio Moscow World Service	21790 21690 17655 15420
2200-2300	Voice of Turkey, Ankara	17880 9445 9665 9685
2200-2300	CBU, Vancouver, British Columbia	6160
2200-2300	CFCF, Montreal, Quebec, Canada	6005
2200-2300	CFCN, Calgary, Alberta, Canada	6030
2200-2300	CHNS, Halifax, Nova Scotia, Canada	6130
2200-2300	Christian Science World Service	9465 15275 15300 15405
		17555
2200-2300	CKWX, Vancouver, British Columbia	6080
2200-2300	CFRB, Toronto, Ontario	6070
2200-2300	KUSW, Salt Lake City, Utah	15580
2200-2300	Voice of Hope, Lebanon	6280
2200-2300	Radio Australia, Melbourne	15160 15240 15320
		17795 21740
2200-2300	Radio Havana, Cuba	7140
2200-2300	Radio for Peace Int'l, Costa Rica	21566 13660
2200-2300	Radio Tonga, Kingdom of Tonga	5030v
2200-2300	Voice of America-East Asia Service	7120 9770 11760 15185
2200-2300	15290 15305 17735 17820	
2200-2300	Voice of America-Eur/Pac. Service	9852 11805 15345 15370
		17610
2200-2300	Voice of Free China, Taiwan	17845
2200-2300	United Arab Emirates R, Abu Dhabi	9600 11985 13605
2200-2300	WHRI, Noblesville, Indiana	13760 17830
2200-2300	WINB, Red Lion, Pennsylvania	15185
2200-2300	WRNO Worldwide, Louisiana	13720
2200-2300	WWCR, Nashville, Tennessee	15690
2200-2300	WYFR, Okeechobee, Florida	11830 13695 17885 17612
		11580 21525
2205-2220	Vatican Radio, Vatican City	9615 11830 15105
2230-2300	Radio Polonia, Warsaw, Poland	5995 6135 7125 7270
2230-2300	Radio Tirana, Albania	7215 9480
2230-2300	Swiss Radio Int'l, European Service	6190
2245-2300	BBC English by Radio, London	7180 11945
2245-2300	All India Radio, New Delhi	15110 11745 11715 9910
		9535

frequency

section

2300 UTC [7:00 PM EDT/4:00 PM PDT]

2300-2310	Sierra Leone Brdcstng Co, Freetown	3316
2300-2315	BBC World Service, London, England	3915 5975 6175 6195 7325 9570 9590 9915 11750 11945 11955 15260 17875 12095
2300-2315	FEBC, Manila, Philippines	6030
2300-2325	Radio Finland, Helsinki	11755 15185
2300-2330	Kol Israel, Jerusalem	11605 9435 15640
2300-2330	Radio for Peace, Costa Rica	21566 13660
2300-2330	Radio Canada Int'l, Montreal	9755 11730
2300-2330	BBC English by Radio, London	6110 9825 11765 11820 15390
2300-2345	WYFR, Okeechobee, Florida	11580 5985 15440 15170
2300-0000	Adventist World Radio, Costa Rica	9725 11870
2300-0000	Radio Moscow North American Svc.	9530 9685 9720 11750 11950 11735
2300-0000	Radio Moscow World Service	21690 21790 21565
2300-0000	Radio Sofia, Bulgaria	15330 11680
2300-0000 A.S	KTWR, Guam	15125
2300-0000	CBN, St. John's, Newfoundland	6160
2300-0000	CBU, Vancouver, British Columbia	6160
2300-0000	CFCF, Montreal, Quebec, Canada	6005
2300-0000	CFCN, Calgary, Alberta, Canada	6030
2300-0000	CHNS, Halifax, Nova Scotia, Canada	6130 15405
2300-0000	Christian Science World Service	9465 15275 15300 17555 15405
2300-0000	Radio New Zealand, Wellington	17680
2300-0000	CKWX, Vancouver, British Columbia	6080
2300-0000	CFRB, Toronto, Ontario	6070
2300-0000	KUSW, Salt Lake City, Utah	15580
2300-0000	Radio Australia, Melbourne	15160 15240 15320 17795 21740
2300-0000	Radio Japan General Service, Tokyo	11835 15195 17810 21610 17765
2300-0000	Radio Luxembourg	6090
2300-0000	Radio Pyongyang, North Korea	11735 13650
2300-0000	Radio Tonga, Kingdom of Tonga	5030v
2300-0000	Voice of America-East Asia Service	7120 9770 11760 15185 15290 15305 17735 17820
2300-0000	United Arab Emirates R., Abu Dhabi	9600 11985 13605
2300-0000	WHRI, Noblesville, Indiana	13760 17830
2300-0000	WINB, Red Lion, Pennsylvania	15145
2300-0000	WRNO, New Orleans, Louisiana	13720
2300-0000	WWCR, Nashville, Tennessee	15690
2305-2355	Radio Polonia, Warsaw, Poland	5995 6135 7125 7145 7270
2315-2330	BBC World Service, London, England	5975 6110 6175 6195 7145 7325 9570 9590 9825 9915 11750 11765 11820 11945 11955 15260 15390 17875 12095
2330-2345	BBC English by Radio, London	3915 6080 7180 11865
2330-0000	Voice of Vietnam, Hanoi	15010 12010 9840
2330-0000	Radio for Peace Int'l, Costa Rica	7375 (+13660 21566 M-F)
2330-0000	BBC World Service, London, England	5975 6110 6175 6195 7325 9570 9590 9825 9915 11750 11765 11820 11945 15260 15390 17875
2330-0000	BRT Brussels, Belgium	12010 13675
2330-0000	M-A Radio Budapest, Hungary	11910 15160 9835 9520 6110
2330-0000	Radio Kiev, The Ukraine	17665 17690 15180 12060 11770
2330-0000	Radio Korea, Seoul	15575
2330-0000	Radio Tirana, Albania	6120 9760 11825
2330-0000	Swiss Radio International, Berne	6190
2335-2345	M-A Voice of Greece, Athens	9395 11645
2345-0000	Radio Berlin International, GDR	6080 11890 13690

THE FREQUENCY FILE

May 1990

WELCOME to a new segment of the Frequency Section, where we'll try to give you a little inside information about what is taking place behind the scenes.

This won't be a place of DX news and tips--you'll have to turn to Glenn Hauser's Shortwave Broadcasting section for that. No, what we'll do here is make some observations and comments on the ever-changing frequency scene, and probably get in a few snide remarks here and there, as space and events allow.

A quick word: What you see here in the frequency section takes some detective work. BRT Brussels, for example, was still announcing a frequency of 9925 kHz, though they were actually on 13675 kHz and 12010 kHz, and had been for over a week. Everyone here at *MT* tries to sort through such things for you.

Some of you may have noticed that Radio Australia has shown up on an old Radio New Zealand stalwart, 15485 kHz. If reception is bad, you have to be careful to tell what you're really listening to. Moscow's World Service in English is now on during our pre-noon mornings on 21565 kHz - if you're not careful, you might think it's Costa Rica's Radio for Peace International just rebroadcasting a Moscow program.

It's not, and you'll see that if you put your receiver in the narrow bandwidth to confirm that it's on 21565 rather than 21566. Now we know why RFPI chose that split channel: to differentiate it from Moscow on 21565. Well, it's just a theory. And it sounds better than saying their transmitter is one diode short of a full fuse.

Speaking of Australia, they have finally shown up on the 13 MHz band. Imagine that. The Aussies are starting to jump around almost as much as the Norwegians!

And what about those Lithuanians! They've got a lot of courage, and I respect that. In fact, I faxed Radio Vilnius a letter of support a few weeks ago to let them know that we at *MT* had listed them simply as being in Lithuania rather than the Lithuanian SSR. I also invited them to the upcoming *MT* Convention. With all the pressure they're under, a vacation in the Smokies would do them good.

If you can't hear Vilnius on the frequencies we list, it's probably because their transmitter access has been stopped. With the events over there being what they are, we can all understand why that might be.

So, now you know what your Frequency Manager has to contend with each month. Changes are taking place so fast that it would drive Superman to kryptonite. But we persevere, and we're all the better for it. I hope. Continue to send your observations to me at 7009 Brandemere Lane, #1, Winston-Salem NC 27106. Your support is really invaluable.

-- Greg Jordan
Frequency Manager

DAK's Ultra-Cheap MR-101 Digital Portable

Psst...wanna good new car? For \$2,500? Or a mouthful of Dubble Bubble for a penny?

No, no, that's not nearly wacky enough. Let's try for something really ridiculous -- a \$49.90 AM/FM/world band receiver with digital frequency readout, programmable channel memories...and a clock thrown in for good measure.

Rock-Bottom Price

The \$49.90 shortwave radio is no joke. Read it for yourself on the back cover of the March, 1990 DAK Industries catalog: "\$49.90 PLL Digital Shortwave Breakthrough."

Yes, \$49.90 with digital readout, five memories, up/down slewing buttons for station selection, a clock with alarm and sleep features, sockets for ac power/earphone/external antenna, a "lock" switch...and, would you believe, a dial light!

How Can It Sell at Such a Low Price?

Normally, a radio like this would sell for at least twice as much. So, what gives? What gives, it seems, has more to do with movements for democracy than profit-oriented economics. This bargain-priced radio comes from no less than the People's Republic of China.

Yes, China, which recently acquired international pariah status when it enforced its Thou Bow to Mao Now policy with rifle fire and tank treads. As a result, convertible foreign currency has since become difficult for the Chinese government to come by, so dumping world band radios on Western markets provides at least a partial remedy.

Strange Bedfellows: Chinese Radio, Taiwanese Handbook

DAK, however, has taken an ecumenical approach to Chinese politics. The MR-101 is made in the People's Republic of China, all right. But the *Frequency Guide*, or *Wave Handbook*, is virtually identical, except for the front cover, to that given out by Sangean, whose radios used to be sold by DAK.

Sangean, of course, is a Taiwanese company, so the frequency guide for this Chinese radio lists the "Voice of Free China" in Taiwan, but not a single station from the People's Republic of China -- not even Radio Beijing!



Forget passports, hotel rooms and jet lag. Now, you can travel anywhere in the world any time of the day or night with the precision of digital Phase Lock Loop tuning at a touch of a button for just \$49.90.

The hype from DAK

Tuning Adequate, but with Shortcomings

The MR-101 is a compact world band portable that, at under 1-1/4 lbs., including batteries, is well-suited for taking along on trips. It covers FM in 200 kHz steps, mediumwave AM from 530-1630 kHz in 10 kHz steps, and the shortwave spectrum from 3.2-7.3 and 9.5-21.75 MHz in 5 kHz steps.

Of course, this means that the fertile 7.3-7.6 and 9.3-9.5 MHz world band ranges are missed in their entirety, as is the 11 meter band and the 21.75-21.85 MHz portion of the expanded 13 meter band. Too, the 200 kHz and 10 kHz tuning steps for FM and mediumwave AM, respectively, are appropriate for the Americas, but not for most other parts of the world, where narrower channel spacing is the norm.

In order to keep costs down, tuning features were kept to a minimum. Not only is there no tuning knob whatsoever, there's also no keypad. Instead, what you're left with is a single set of up/down multi-speed slewing buttons and five programmable channel memories.

In reality, that sounds worse than it is. The slewing controls are so flexible in their speed that you can chug the radio up or down one channel per tap, bandscan at a comfortable rate, or soar up and down the shortwave spectrum at dizzying speed (tuning

from 9.5 to 21.7 MHz takes only ten seconds). The real problem, because it's so fast, is to stop the slewing process near the desired channel. You need a sharp eye and good reflexes.

In any event, the slewing scheme works acceptably, and the five memories are a snap to program. In fact, these can be set to five different bands to reduce reliance on the slewing buttons. However, complicating tuning is the MR-101's use of an old-fashioned "SW1 SW2" control. (Radios incorporating more recent technology have one setting for the entire shortwave spectrum.)

SW1 tunes from 3.2-7.3 MHz, SW2 from 9.5 to 21.75 MHz. It's an antiquated concept and an annoyance, but hardly a major drawback in a fifty buck radio.

Many Features for Price Class

While the MR-101 is hardly feature laden, it includes some extras normally found only on more pricey models. For example, when is the last time you saw a low-cost world band radio with a dial light? The MR-101 has one, and it works well.

Having a clock with timing facilities on a world band radio is also a great idea. You can use the clock to ascertain World Time (UTC), and as a timer it can allow for at least

SEEKER-PC®

The Professional Solution for Communications Monitoring.

SEEKER-PC		File	Mode	Controls	Utility	Setup	HELP	FREQUENCY RANGE SCAN
TIME/DATE	UTC: 02:18:59 Friday	LOCAL:	17:18:59 Thursday					
								10-26-1989
UFO A:	15.315.000 AM	↑ FREQ UP						
UFO B:	9.535.000 AM	↓ FREQ DOWN						
MEM # 98:	9.580.000 AM	AM	LSB	RITTY				
STEP SIZE:	0.001.000	CW	USB	FM				
STATUS (OFF/ON)	AUTOSEEK	PRINT LOG	DATABASE LOG					RECORDER
Evaluator:	AUTOSEEK SCANNING ACTIVE							Loops complete: 3

Power to Bring the World to your Ears - SEEKER-PC

SEEKER-PC runs on an IBM-PC or compatible and supports the Kenwood R-5000. Interface is included. ICOM R-71 support is near completion.

A similar product, SEEKER, for the Commodore 64/128 and ICOM R-71 is also available.

Free detailed info or \$15 for demo disk and manual (IBM or C-64) to ...

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United States of America
(708) 623-4744



Performance: Good news ... and Bad News

Performance, overall, is a mixed bag. On one hand, selectivity is quite good -- far better than that of many sets costing over twice as much. Audio quality, while a bit tinny, isn't too bad, either.

However, this set is about as insensitive a device as we've ever tested. If you are trying to tune in anything like a weak signal -- or even a signal of reasonably moderate strength -- forget it! Too, the MR-101's IF circuitry is of the single-conversion variety -- hardly surprising for a receiver in this price class.

This means that you get lesser-strength "repeats" of radio signals that actually operate almost 1 MHz higher. Ironically, this is not all that much of a problem because of the set's pronounced lack of sensitivity.

Quality of Construction Only Fair

The MR-101's quality of construction is slightly below average, but acceptable for its price class. The main problem is the telescopic antenna's non-rotating swivel bends easily. Should that swivel break, it would be harder than most to replace -- assuming you can get the part.

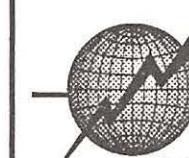
The Bottom Line

DAK's MR-101 is an awful lot of receiver for very, very little money. In some respects -- notably, selectivity and digital frequency readout -- it resembles radios costing at least twice as much. DAK calls it a "breakthrough," and it is.

That's the good news. The bad news is that if a radio is unable to pick up a signal in the first place, it doesn't matter how well it does or doesn't process that signal or display frequencies. The MR-101 sorely needs a boost in sensitivity and fuller coverage of the 7.3-9.5 MHz range.

For casual listening, especially along the East Coast where signals are stronger, the MR-101 is a real bargain. It is also suitable for listening to world band on trips to Europe -- provided you aren't interested in listening to AM or FM while you're over there. After all, if Borshov the bellhop rips it off, so what?

As we go to press, DAK had completely sold out its first shipment of MR-101s and was heavily back-ordered for the second shipment. So, if you want this radio, you may have to be patient.



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■ Sony Pro-80	\$350
■ RACAL RA-6790 (GM)/R-2174	CALL
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You can hear Larry Magne's equipment reviews the first Saturday of each month, plus PASSPORT editors Don Jensen and Tony Jones the third Saturday, over Radio Canada's "SWL Digest." For North America, "SWL Digest" is heard at 8:10 PM ET on 5960 and 9535 kHz, with a repeat Tuesday at 8:30 AM ET on 9635, 11855 and 17820 kHz.

PASSPORT's "RDI White Paper" equipment reports contain everything found during its exhaustive tests of communications receivers and advanced portables. These reports are now available in the U.S. from Universal Shortwave and EEB; in Canada from PIF, C.P. 232, L.D.R., Laval PQ H7N 4Z9; in Europe from Interbooks, 8 Abbot Street, Perth PH2 0EB, Scotland; and in Japan from IBS-Japan, 5-31-6 Tamanawa, Kamakura 247. For a complete list of reports, send a self-addressed stamped envelope to RDI White Papers, Box 300, Penn's Park PA 18943.

Regency INF 50 Desktop Scanner

As anyone who has read this column over the last couple of months will immediately note, Uniden has released a number of similar easy-to-program scanners to the consumer marketplace.

The INF50 operates from a 120VAC/12VDC wall transformer power supply and delivers 2 watts of clean audio to its top-mounted speaker. A weather button allows instant access to NOAA weather broadcasts.

Using the same technology as other members of the "Informant" scanner series, hundreds of preprogrammed police, fire and medical frequencies are retained in permanent ROM. By pressing STATE, the CPU defaults (presumably) to those frequencies active in the selected state.

A backlit LCD shows the two-letter abbreviation for the state selected (NY, CA, etc.) or the service desired (PO, FD, MD, WX). When a particular transmission of interest comes on during the search routine, a HOLD button prevents scanning until you want it to. Active frequencies of low interest may be skipped by pressing DELETE.

Any combination of police, fire or medical channels may be selected by toggling the service key for each of these categories. If an attempt is made to deactivate all three services, NO will be displayed.

The INF50 comes with a plug-in whip; a standard Motorola jack allows interconnection with an outside antenna if desired.

The Regency INF50 can be found in the \$110-\$120 price range from *MT* advertisers.



INF 50

An unusual -- and useful -- product!

AIE TONE FINDER

A subaudible tone (continuous tone coded squelch system--CTCSS) prevents mutual interference among groups of users on a common frequency. With tone squelch, signals will be heard only when accompanied by the appropriate tone, ignoring other transmissions.

The Uniden BC760XLT scanner offers a subaudible tone squelch option. Many listeners would find more use for their 760s if they knew what tones were present on signals of interest. Service shops need to determine CTCSS tones on signals in order to properly set compatible equipment.

Automated Industrial Electronics (141 Granite Street, Batesburg, South Carolina 29006; phone 1-803-532-9256) offers a model TF-1 Tone Finder, a hybrid scanner

and frequency counter combination which digitally displays the frequency of any subaudible tone present on a received frequency.

The TF-1 is built around a Regency R1070 programmable scanner which has all original functions: low, high and UHF narrowband FM reception; ten memory channels; search; individual channel lockout, all-channel delay and even a test mode. A plug-in whip is included. So even when you aren't using the CTCSS test feature, the TF-1 makes a dandy back-up scanner!

How Does it Work?

A switched-capacitance, low-pass filter with a 250 Hertz cutoff separates the subaudible tone from the rest of the audio

modulation. The extracted tone is fed to a 40 kHz multiplying frequency counter for rapid registration of the tone frequency.

Our lab tests showed the system to be equally effective on weak and strong signals, instantly revealing the tone frequency—if present—on its large (1/2" numerals), bezeled LED display. In fact, even on marginally-receivable signals with whistling or noise present, the subaudible tone was displayed solid as a rock.

Tones are read out to the nearest lower whole-number frequency. For example, CTCSS tone 1A, 103.5 Hz, would be displayed as "103". With such accuracy (averaging better than 1%), it is easy to spot off-frequency tones.

A Peek Inside

The temptation to look inside the customized add-on portion of the scanner/counter was irresistible. Inside the sturdy aluminum enclosure was a professionally-designed glass-epoxy circuit board. The integrated circuits—and there's

a bunch of 'em—were in sockets for easy test and replacement should it ever become necessary.

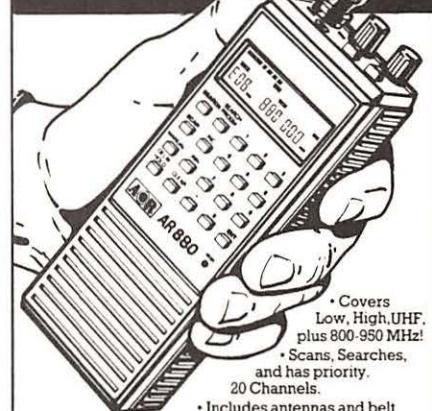
As with many Regency-designed programmable scanners, receivable frequency ranges are considerably wider than advertised. The R1070 in our TF-1 was capable of 23.2-54.6, 137.5-188.6 and 390.7-539.1 MHz coverage.

The R1070 may be forced to accept even wider frequency ranges by re-entering the frequencies which were rejected with "ERROR" the first time: 23.0-55.395, 136.795-190.75 and 389.2-551.187 MHz were finally retained by our sample.

The AIE TF-1 tone finder, complete with manual and instructions, normally sells for \$385, but if you mention reading this review in *MT*, they will sell you one for a limited time for only \$225! Readers may wish to take advantage of this unusually low price for a unique and very useful item before the price goes back up.

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AR880

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mt

catalogs

We've found it! The ultimate catalogue!

Crutchfield is a 16 year old mail order retailer of electronic equipment. Based in Virginia, they offer three separate catalogues that cover car and home audio, home office equipment, and security.

Virtually anything in the Crutchfield catalogue would make a nice addition to the radio enthusiast's shack -- or car. There's 14 pages of FM tuners for the auto. These are arranged by price and start with the Jensen CS-1000 (list: \$130, Crutchfield: \$89).

The CS-1000, Jensen's lowest-priced model, allows for manual or scanner tuning, five FM and five AM memory presets, a built-in FM noise suppressor, and local-DX switch.

On the other end of the price spectrum is the Pioneer DEH-55 CD/Tuner/Amp (list: \$720, Crutchfield: \$499), a slick, high-tech looking unit that allows you to take your CDs on the road.

There are dozens of pages offering equalizers, amplifiers, speakers, antennas and more -- and that's just



for car audio!

For home use there are tuners that run from Kenwood's \$199 KR-A4010 to the staggering Sony STR-D2010 that lists for \$1100 and sells for \$999. Built-in digital processing circuitry converts all signals going into the STR-D2010 to *digital signals*, which can then be manipulated and fine tuned in a way no ordinary receiver can.

All of this is tempting enough in its own right -- this is "kid in a candy store" stuff for anyone who enjoys electronic equipment -- but we've never seen a better produced catalogue.

What makes the Crutchfield publication unique -- besides the fact that they use ordinary models, not people so pretty that they make us feel like a toady -- is that they are so *helpful*.

Before they get on with the sales pitch, the catalogue offers in-depth explanations of the terms you're going to encounter when selecting a piece of equipment from their catalogue. "Finding the Right Stereo for Your Home" takes

you by the hand and tells you about individual components, how they work and how to judge them. The explanations are crisp, clear and free of excessive sales hype.

free "HelpLine" for questions "before or after ordering." Use it to call for their catalogue. And tell them you read about it in *Monitoring Times*. (I'm not sure why you should tell them that you read about it in *Monitoring Times*. It just seems that everyone writes that in magazine articles.)

Electronic gadgetry for the experimenter

Finally, the new MCM Electronics catalog is out. As usual, it's filled with amazing things. While probably of more interest to the experimenter-project builder and otherwise technically-inclined hobbyist, every listener should have a copy.

Because not only do they have an impressive array of test equipment, tools and parts, they also have those special items that radio listeners often need -- like replacement telescopic antennas, patch cords, replacement speakers, coax, connectors and hard-to-find batteries.

Want a copy? Call toll-free 1-800-543-4330. And, yeah, tell 'em *Monitoring Times* sent ya!

"Catalogs" welcomes your participation. See something interesting in your pile of fresh junk mail? Clip it and send it in! Add your own comments.

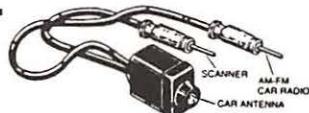
Be sure to include the name of the catalog, the item's description, price and shipping information along with the phone order number. Send it to "Catalogs," P.O. Box 98, Brasstown, NC 28902.



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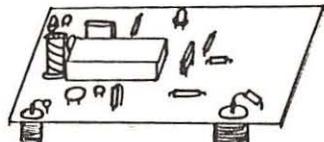
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If your desktop scanner is equipped with a BNC antenna connector, try the new Grove ANT-8B with right-angle adaptor for improved low, high and UHF band reception when an outside antenna is not practical.

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\$21.95

Hear Shortwave on Your Scanner!



How would you like to hear worldwide shortwave on your scanner? If you presently have aircraft band coverage, the world is yours with the new CVR1 Scanverter module from Grove Enterprises! We even provide the antenna!

Not a kit, the Grove Scanverter module comes fully assembled and tested! Simply attach a 9 volt battery and listen to the BBC, Radio Moscow, the Voice of America, even time and propagation alerts from WWV and CHU! And if your scanner covers 115-141 MHz (AM mode), you can hear your local AM broadcasters and even CB!

The Grove shortwave Scanverter connected to your scanner unleashes global listening power! A quick glance at your conversion chart tells you where to tune in signals and how to interpret your scanner's frequency readout for shortwave.

The CVR1 Shortwave Scanverter module comes complete with antenna and interconnect cable (cabinet not included). Tell us your scanner model when you order.

Order CVR-1

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Mobile Antenna

Designed specifically for today's wide frequency coverage scanners!

Utilizing Grove's exclusive multi-element construction, this sleek, black, "24 fiberglass whip, mounted on a strong, chrome-finished magnetic base, assures premium signal reception on 30-50 MHz low band, 118-136 MHz aircraft, 136-174 MHz high band, 225-400 MHz military aircraft, 406-512 MHz UHF land mobile and 806-960 MHz microwave mobile.

Tested to withstand at least 85 MPH road speed and equipped with 12 feet of coaxial cable.

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Build a Low-Noise VHF/UHF Preamp

Do you enjoy monitoring the VHF and UHF land-mobile frequencies? If this is part of your routine, chances are you need a signal booster to help pull in those weaker signals. Some of the older scanner receivers, in particular, are not monuments to sensitivity or low noise figures. A simple preamplifier may be inserted between the antenna feed line and the input jack of the scanner to bring new life to old receivers. In fact, a signal booster can even be useful with many of the modern VHF or UHF receivers.

This project is within the technical ability of most experimenters. All you need is a small handful of parts, a piece of PC board and a 25- or 40-watt pencil-type soldering iron. Of course, you will need to invest three or four hours of your leisure time to get the circuit up and running but what better way to spend an otherwise dull evening?

Preamplifier Advantages

Noise-figure improvement is perhaps the major benefit you will realize when you use an outboard preamp. This assumes that the preamp has a noise figure that is lower than that of the receiver with which you intend to use it.

A noisy preamp can worsen an already noisy receiver front-end circuit. Therefore, care must be taken when choosing a transistor for the preamp — one that assures low-noise amplification in the frequency range of interest. You must pay attention also to the biasing of the transistor. There is a bias level that enables the device to operate in its most quiet manner.

The gain (amplification factor) of the preamp must be slightly greater than that of the first stage in the receiver. Too much gain may cause receiver front-end overloading, and this can ruin reception. There are many things to consider when developing a practical preamplifier. But, increased front-end gain can mean the difference between copying a weak signal or having it become lost in background noise.

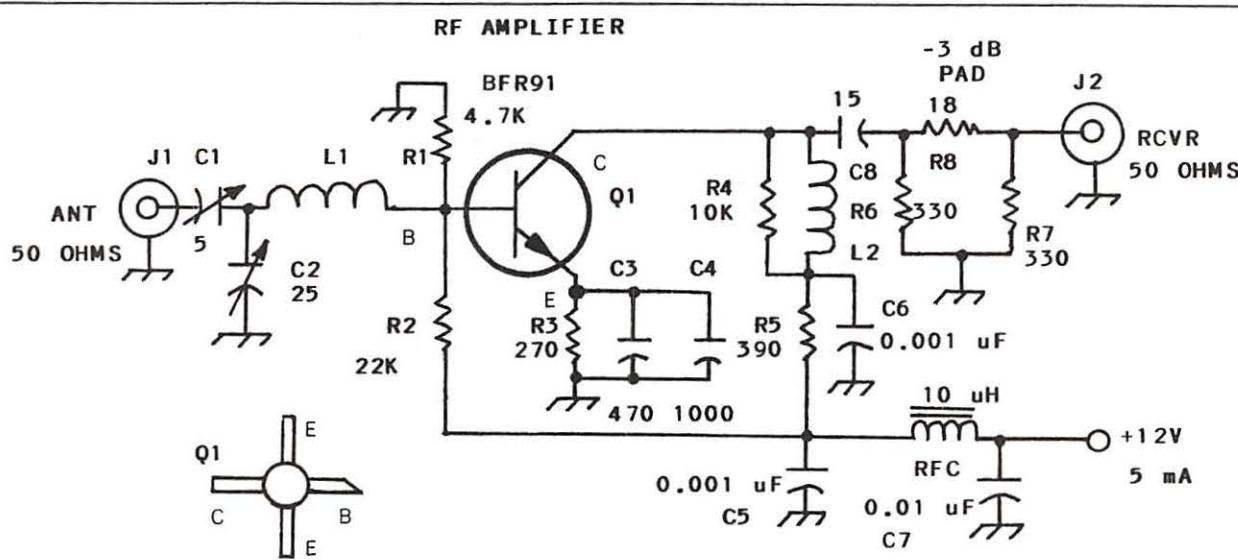
This Month's Project

Figure 1 shows the circuit for our VHF/UHF preamp. The lowest operating frequency is approximately 140 MHz. The useful upper limit is roughly 450 MHz. Maximum preamp gain occurs at 140 MHz and drops approximately 3 dB per octave higher. Thus, if the gain is 12 dB at 140 MHz, it will drop to 9 dB at 280 MHz, and so on.

The noise figure increases slightly as the operating frequency is increased. The NF (noise figure) of the circuit in Figure 1 is 3.5 dB at 400 MHz. It is approximately 2 dB at 140 MHz. The preamplifier gain is on the order of 17 dB at 140 MHz and 10 dB at 450 MHz. This depends on the tuning adjustments and the exact nature of the particular transistor you plug in at Q1.

The Figure 1 amplifier is designed for a 50-ohm input and output impedance. C1 and C2 are adjusted to provide a matched condition between the feed line and the preamp input. This coincides with maximum Q1 gain, since maximum power transfer can only occur when unlike impedances are perfectly matched.

The output circuit for Q1 of Figure 1 is broadband. A 3-dB 50-ohm resistive pad is used at the output of the preamp to ensure a 50-ohm termination and amplifier stability. This circuit, like most solid-state amplifiers, can self-oscillate when it is not terminated in its design load impedance. The pad causes a 3-dB reduction in signal level. The resistive pad may be eliminated if your receiver has an assured 50-ohm input impedance. This will buy an additional 3 dB of effective preamp gain.



Capacitance is in pF except for decimal-value units.
Resistance is in ohms. K = 1000

MRF901 DATA

R1 = 1K
R2 = 4.7K
R3 = 150 ohms

Figure 1 -- Schematic diagram of the VHF/UHF preamp. C1 and C2 are miniature ceramic, plastic or glass piston trimmers. L1 is 4 turns of no. 24 enamel wire, 1/2 inch long and with an ID of 3/16 inch. L2 has 5-1/2 turns of no. 24 enamel wire, 3/16 inch ID by 1/2 inch long. RFC is a miniature 10- μ H choke.

I use a Motorola BFR91 UHF transistor for Q1. A Motorola MRF901 may be substituted if you change the resistor values as indicated in the Figure 1 table. A 2N2857 (TO-72 case) may be used at Q1 with appropriate layout changes. This is not a strip-line case style device, as are the BFR91 and MRF901 transistors. These transistors are available by mail.¹

Construction Hints

You may build your preamplifier on a 1-1/4 x 2-1/4 inch piece of single-sided PC board. Figure 2 shows the board layout at two times scale. The parts are mounted on the foil side of the board. This ensures the very short leads that are mandatory.

All of the components must be mounted so that they are snug against the PC board, except for L1 and L2. These coils must have sufficient clearance to prevent being short-circuited against the copper conductors of the board.

Miniature ceramic capacitors should be used in this circuit. The resistors are 1/4-W carbon composition. Carbon film resistors may be used, but they are more inductive than are the older style carbon composition ones.

You can form the isolated pads on your PC board by laying them out, then grinding away the unwanted copper by means of a hobby motor with a small cone-shaped abrasive bit. I suggest that you etch the board with ferric chloride solution if you are experienced with its use.

You can cover the copper of the blank board with ducting tape or an equivalent tight-sealing tape. Draw the PC pattern on the tape, then cut away the unwanted portions with an X-Acto knife. The board can then be etched in ferric chloride, which is available at Radio Shack stores in small bottles.

Adjustment and Use

The completed preamplifier should be checked carefully to ensure that all of the parts are in the correct locations. Check also for unwanted solder bridges between the copper islands. Connect the preamp between your antenna feed line and the receiver. Locate a weak VHF signal and adjust C1 and C2 several times to obtain the loudest signal and the least noise. No further adjustment is required.

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• Works with all World Band Portables and Scanners •
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AntennasWest Box 50062-M FREE Storage Pouch
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You may wish to include a preamp bypass switch (DPDT) to take the preamp out of the antenna line when it is not needed. It will not improve the reception of loud signals.

Summary

I hope you will build this little amplifier. The experience you gain will be valuable, and you will have the ability to enhance your reception of land-mobile, aircraft and other signals in the VHF and UHF spectrum. The completed preamp can be installed in a small shielded box to protect it from dust and to prevent signal energy from entering the circuit via paths other than the input circuit.

Footnote:

¹ Circuit Specialists, P.O. Box 3047, Scottsdale, AZ 85371-3047. Catalog available. Toll free 800-528-1417.

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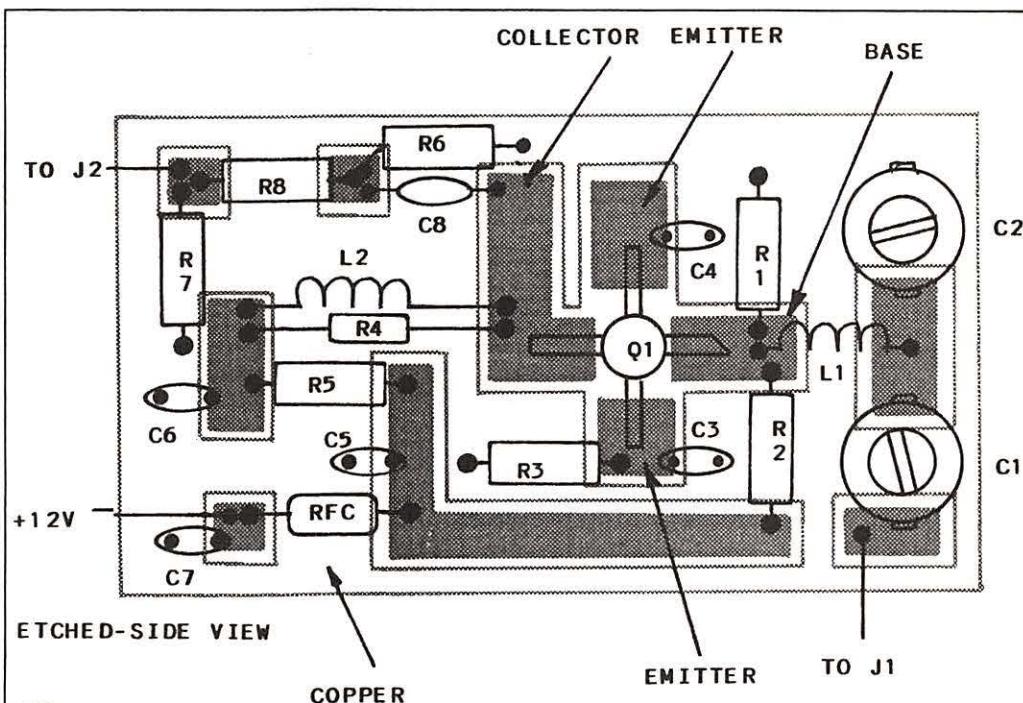


Figure 2 -- Circuit-board pattern and parts-placement guide as seen from the component and foil side of the board. Retain the copper on all of the board except those areas immediately adjacent to the isolated pads. Pattern is shown 2 times scale.

The Readers Respond

It's mailbag time again. About every six months, I assemble the most noteworthy of the correspondence and include it in this column so others can read and learn. For every one of you who takes the time to write, there are at least ten of you out there who have a similar question or comment. So here goes...

Sony 2010 Blow-out

Dateline: Wilkes-Barre, Pa. A local radio magazine columnist, Richard Arland, has been convicted in Luzerne County court of violation of section 73.88 of the Radio Writer's Code of Ethics: Sony-Bashing.

Yes, friends, it's true. I did engage in a bit of Sony-Bashing -- and it was FUN. Actually, the December '89 Experimenter's Workshop comments regarding the Sony 2010 generated quite an influx of mail. My heart was in the right place, but my timing was a bit off.

The correspondence was evenly split between those who agreed and those who were ready to lynch me. Upon checking with Bob Grove of Grove Enterprises, warranty and maintenance records on Sony 2010s sold during the last year and a half have turned up no returns for replacement of Q-303 (the RF front end transistor) that was so fond of self-destructing.

According to Bob, about two years ago Sony design engineers did, in fact, redesign the RF front end of the 2010 to remedy the problem. However, there is one disturbing fact remaining; articles are still showing up in radio publications, and comments are still being heard on the ham bands and elsewhere attesting to the fact that there are some late model 2010s that are subject to Q-303 problems.

For all of you who wrote, both pro and con, on the topic of the 2010, and for those who are still in a quandary about the receiver's track record, let me make the following statement: "As long as you use the 2010 according to the instruction manual supplied with the radio, there is little chance of blowing Q-303."

As Bob Colegrove writes to point out, the whip antenna on the 2010 is diode protected (back to back diodes across the input to the radio) that will normally handle any static discharges or hot RF from a nearby transmitter.

HOWEVER: the external antenna jack on the side of the radio DOES NOT have this diode protection. Hence, when you plug an external antenna into this jack, you are effectively looking directly into the input port of Q-303. Any static discharge or high RF field present on the outside antenna will be applied to the input of Q-303. USE CAUTION when hooking the 2010 up to an external antenna. If you use the short (15-20 feet of wire) antenna that Sony supplies with the 2010, there is little danger of inflicting anything fatal on Q-303. Common sense rules.

There will always be those individuals who, in the truest tradition of the radio hobby, will want to squeeze the maximum amount of performance out of their radio, and to these intrepid souls I'll say: "Caveat Emptor, Bubba!!

John Barbato writes inquiring as to the kind of symptoms exhibited by a 2010 with a blown Q-303. First of all, the symptoms are *not* that noticeable on the shortwave broadcast bands. The real loss of performance seems to occur on the AM (medium wave) and tropical band segments. About the only way to know for sure is to compare the suspected unit with a known good 2010 and observe the S-meter of both units when they are tuned to the same station in the MW and TB segments.

If your unit proves to be bad, get it to a competent service person as soon as possible. If you need the services of a qualified technician, contact your favorite radio store. Many offer outstanding technical support and maintenance for the Sony 2010 and other top-line shortwave receivers.

Note: For anyone inexperienced with working on high density circuit boards, do not, under any circumstances, attempt to replace Q-303. Neither myself nor *Monitoring Times* magazine will be responsible for any modifications or repairs attempted by owners of products discussed in this column.

Arnold Cook, N9AKX and Rich Graham both wrote to say that Q-303 has several replacements listed: 2SK152, ECG312 and NTE312. Thanks, guys.

Peter Credit, KC0DP, writes to ask if there are any filter mods available for the Sony 2001 (the predecessor of the 2010). Yes and no, Peter. Best thing to do is to contact the repair facility at your favorite radio store and see if they have the necessary filters and would be willing to do the work. Get price quotes prior to sending the radio.

On Scanner Mods and Morals

On to the scanner crowd: Bob Baetke sent along a list of mods for the Bearcat BC140 to make it function like the up-gunned BC-145. These will be featured in an upcoming "Experimenter's Workshop." Roy McKenzie (along with several others) wrote to ask for mods for their favorite Bearcat scanner, the BC-200XLT. So, how about it gang? Anyone got mods for the 200XLT?

Mods for the RS PRO-34, PRO-2021, and PRO-2004 (adding an S-meter) have been requested by Pat Brown, Jason Jakragin and John Cain. Well, guys, there is not much in my files for the 2021 or the PRO-34. An S-

Meter for the 2004 should not be a biggie. The only problem might be where to put it on the radio. An add-on box with S-meter is a bit unsightly. Let me research this one. I would like to get a meter on my 2021, also.

On squeezing the maximum performance out of your radio (adding mods, external accessories, preamps, etc.) I'll say, go to it, but "Caveat Emptor," Bubba!

Steve Morehouse sent along some pictures and describes a mod for the ICOM R-7000 to increase the scanning speed to 20 CPS. That has been a very popular topic in the mail. Looks like we have received a workable answer from Steve which will be presented in a future EW column. Many thanks, Steve.

As long as we are talking about the R-7000: Bill N7JYG writes to state his views on the ECPA and the temptation to users of receiving equipment that can access the "Forbidden Zone" of cellular frequencies.

Bill, any tool (and a receiver is a tool just like a pistol is a tool for a cop and an axe is a tool for a fireman) can be used for other than its intended purpose. Just like the pistol, which can be used to knock over a liquor store, or the axe which can be used to dismember another human being, a receiver capable of accessing the cellular frequencies can be used for unlawful monitoring of those frequencies, in violation of the ECPA. Like

Monitoring Times invites you to submit your favorite projects for publication. For more information, contact Rich Arland, c/o MT, P.O. Box 98, Brasstown, NC 28902

most things in life, the onus is on the user to ensure that the receiver is not misused. We all tend to "push the envelope" a bit (whether it's driving over the 55 MPH speed limit or listening to a bookee operation on cellular).

The ECPA laws regarding monitoring of the "Forbidden Zone" are, in my sole and humble opinion, 99.9999999 percent unenforceable. Therefore, people will normally do what they can get away with. Unfortunately, the cellular industry is a self-serving group who want the best of both worlds. On one hand, all major cell-tel manufacturers hawk their product to the consumer public, trying to instill a sense of security about using their product.

The ECPA was a thinly veiled infringement on our rights to monitor communications transmitted via radio. This "law" is extremely dangerous. It attempts to give the cellular user a false sense of security about his/her communications that just does not exist. The majority of these same cellular manufacturers ALSO market scanners, some of which are capable of receiving these "Forbidden Frequencies" right out of the box or after a very simple modification.

Since you can monitor the cellular frequencies by tuning any UHF TV set between channels 60 and 83, why don't we confiscate all the UHF TVs? Heaven forbid, some one might try to listen to the Sacred Cellular Frequencies.

Technology is available to completely eliminate the cellular coverage on these scanners at minimal cost to the manufacturer by simply redesigning the way the synthesizer coverage is set. By not doing the redesign, the cellular/scanner manufacturers are keeping their options open for future marketing strategy, should the ECPA be modified or overturned. It all boils down to \$\$. As for the R-7000, this is a VHF-microwave communications receiver of superb design and performance. To restrict the frequency coverage on this outstanding receiver would have been a criminal act!

Mike Schruber, K6KCQ and Dino Papas,

Feeling Left Out?

Have your favorite communications (Police, Fire, etc) moved to the 800MHz band? Are the scanners available which access this band too expensive? If you are like many scanning enthusiasts, this can be a real dilemma. For those of you who are still in a futile search for 800 MHz coverage on your hand held scanning radio, GRE America, Inc. has a product for you. Introducing the newly developed **Super Converter™ II** which has all of the features that you have come to enjoy in our **Super Converter™ 8001** (810 - 912 MHz coverage, etc.), and more.

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WSJ/KL7, both wrote to say that the TorresTronics digital add-on display for receivers/transceivers is still available from Communications Concepts, 508 Millstone Dr., Xenia, Ohio 45385. Dino even included the original QST article (Jan '80) and the assembly manual.

Many thanks, guys. (Hey, Dino . . . R U the same Dino that was stationed at Ft. Monroe a few years back and attended the SPARK club meetings in Hampton, Virginia? AIRBORNE!)

The TorresTronics digital readout is a

godsend for analog receivers. I had one hooked up to an Argonaut 509 QRP transceiver for many years and it worked very well. Several serious tube-receiver DXers I personally know use these readouts on Hammarlund HQ-180s, R-390s, etc. They are very useful.

Until next month, a BIG "Thank you" to all who took the time to write. A special "Thanks" to those who sent in article material which will be used in upcoming "Experimenter's Workshop" columns. 73s es gd DX.

ONE FROM ACROSS THE POND:

The G5RV Multiband Antenna

It seems that the easy-to-build antenna designs available to us are almost always one-band antennas. They usually work quite well on the band for which they are designed, and not as well (sometimes poorly) on other bands.

It is exciting, then, to find an antenna design which is simple to construct and yet gives good performance on a number of bands. Just such an antenna is the G5RV antenna, developed by a British amateur radio operator with the call sign of, you guessed it, "G5RV."

For use in transmitting and receiving on the shortwave ham bands (80, 40, 20, 15, and 10 meters), the G5RV has long been a respected antenna. Less well known is the fact that it does quite a decent job as a receive-only antenna on the shortwave broadcast bands too. I say this because I have used one for both purposes in my station and obtained good results with the antenna in both applications.

So, if you want one antenna which will serve you well on the ham bands, and also give a good account of itself when monitoring shortwave broadcasts, read on: the G5RV may be just what you are looking for.

LET'S BUILD ONE:

To build this antenna, you will need about 104 feet of antenna wire, 30 feet, 4 inches of 300-ohm twinlead TV-type lead-in cable, three antenna insulators, and enough low impedance (50 to 75 ohms) coaxial cable to run between the antenna and your shack. One end of the coax will need to have a plug which fits the antenna socket on your rig. You will also need incidentals like guy ropes, black plastic electrical tape, and coax-type sealer.

Here are the steps in building the G5RV.

1. Cut two pieces of antenna wire each to 51 feet, 6 inches in length. These will be the radiating portion of the antenna.
2. Slip insulators onto each end of one of the wires just prepared. Pull the wire through the insulator only enough to make the overall length of the wire equal to 51 feet once the insulators are fully attached (see Figure 1).
3. Next, using a knife edge, prepare the wire for soldering by scraping both the ends of the wire and the body of the wire at the places where the wire will wrap around itself as shown in Figure 1. The wire must be scraped bright so you can solder the wire to itself to hold the wire on the insulator. When the scraping is finished, wrap the ends around the body of the wire as shown in Figure 1, and solder the wrapped portion in place.
4. Now cut the 300-ohm twinlead to a length of 30 feet, 4 inches. Trim the insulation from two inches at each end of this cable.
5. Take one end of the twinlead and wrap one of its conductors around the soldered connection on one side of the center insulator which attaches the two 51 foot antenna elements together (see Figure 1). Solder this conductor in place. Then similarly wrap and solder the other twinlead conductor at this same end of the twinlead to the soldered connection on the other side of the center insulator.
6. Now prepare the coax by stripping off the outer insulating jacket off one end for about two inches. Then undo the braid of the coax from around the center insulation, and twist it into one thick strand, as shown in Figure 1. Remove the center insulation of the coax from the center conductor of the coax for about one inch.
7. Attach and solder the center conductor of the coax to one conductor of the unattached end of the twinlead cable. Attach and solder the other twinlead conductor to the thick strand of coax shield (see Figure 1).
8. Now use black plastic tape to tape the connection between the coax and the twinlead so that there will be no

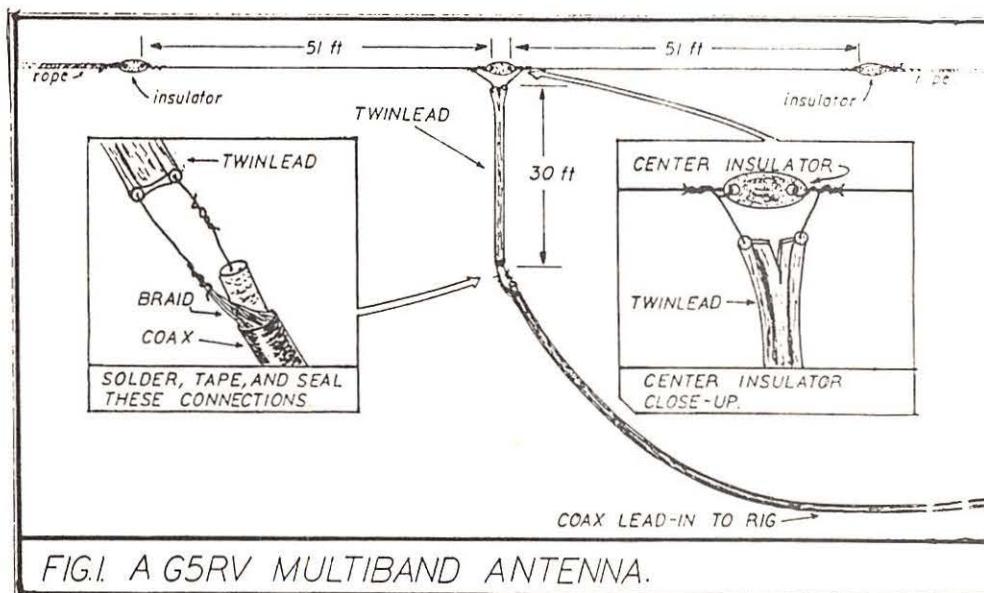


FIG. 1. A G5RV MULTIBAND ANTENNA.

touching of wires that should not touch each other. Also make the taping as watertight as possible.

10. Cover the taped section with coax-type seal to prevent moisture from entering the connections.
11. If you live in lightning country, don't forget lightning protection. The minimum is to never use the antenna during stormy weather, and disconnecting and grounding the antenna when it is not in use.
12. Now you can connect the connector end of the coax to your rig and enjoy some G5RV communications.

RADIO RIDDLES

Last Month: Last month I reminded you that recently this column had reference to "romantic antennas," (the rhombic antenna which is constructed of two "mouth-to-mouth" V antennas). And we've all heard of "active" antennas, haven't we? Then last month we discovered "lazy" antennas. So, noting that antennas possess these human traits, I asked you to guess "just how human an antenna can get?"

Well, as surprising as it may seem, an antenna can be totally human. That is, an antenna can be a human! Better said, a human can be an antenna. Of course, anyone who tinkers with the innards of a radio soon finds that they can disconnect a radio's antenna, touch a finger to the antenna connection inside the set, and hear signals as their body, connected to the set via their finger contact, serves as an antenna. But I'm not talking about just that.

Did you know that serious research has been done on the use of the human body as an antenna? For instance, Rudge et al¹ report work which indicates that: "...In the range of 30-80 MHz, the human body behaves in a manner similar to a lossy dielectric cylinder. Suitably fed, it can act as a moderately efficient radiator..." They then show a graph of "man as antenna, relative gain of base-fed man compared to base-fed whips."

The gain of such a "base-fed man" ranges from around -9 dB at 30 MHz to 0 dB at 80 MHz. How about it folks, anyone want a career in communications as an antenna? Of

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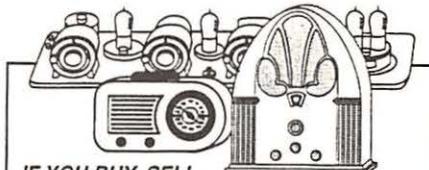
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course, watch where you put your finger. One wrong move and you could be a dead human antenna.

This Month: Well, I was surprised when I read the reference on the study of "man as a base-fed antenna." But then I got to thinking, and realized that radio is a very human endeavor indeed. That is, various other radio functions, other than the antenna function, can be served by various parts of the human body.

Next month I will report to you some amazing, even shocking (pardon the pun) applications of the human body to serve as parts of a radio communication system. And these are applications which have been tried, have worked, and been reported in the radio literature.

So tune in next month for some surprises. Till then, Peace, DX and 73.



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¹The Handbook of Antenna Design: V. 2, A. W. Rudge, K. Milne, A.D. Oliver, P. Knight. 1983, London, Peter Peregrinus Ltd. on behalf of the Institution of Electrical Engineers. Pp 824.

Q. My property deed restricts me from erecting a high antenna. Can I run the wire along the top of an eight-foot fence, including around the corners? (Mark Widerstrom, Houston, TX)

A. Yes, if the fence is not metal, with some additional caveats. A shortwave receiving antenna close to the ground is not as effective for receiving great distances as a high antenna. Bending the wire at right angles has unpredictable directional effects. Bending it back on itself will reduce signals at some wavelengths unless the spacing is large.

Q. I have an old Bearcat crystal scanner; where can I buy crystals? (Roger Turner, Bassett, VA)

A. You might try calling Uniden's parts department (1-317-842-1036) to see if they still stock crystals. Many companies specialize in custom crystals and advertise

in the ham magazines. One reliable private source is Gerry Oliver (G&G Communications, 9247 Glenwood Drive, LeRoy, NY 14482; ph. 1-716-768-8151).

Q. I would like to receive weather pictures from 137-138 MHz satellites, but I need to filter out the strong terrestrial interference outside of that range. Is there a filter available to remove these "outside" frequencies? (John Pyle, Peterborough, England)

A. Yes. The TVRO industry manufactures in-line filters for a wide variety of narrow frequency ranges. Contact a commercial supplier of home-satellite accessories for a bandpass filter for the frequencies of your interest.

Q. Have the Soviets stopped jamming American shortwave transmissions? (Donald Michael Choleva, Euclid, OH)

A. At this writing, yes. There are occasional jamming transmissions made by the Soviets against countries in their zone of doctrinal influence when radio is fueling political unrest.

Q. I am hearing the image of a local repeater 43.2 MHz higher than its actual frequency. Does that mean my scanner has a 43.2 MHz intermediate frequency (IF)? (Robert Barker, Austin, TX)

A. The primary image frequency will always be twice the IF, so your scanner's IF is 21.6 MHz.

Q. What are the minimum equipment requirements to hear satellite subcarrier services like "elevator music", stock market reports and news services? (Barney Fontenot, San Antonio, TX)

A. For signal reception you will need a standard TVRO terminal (satellite TV dish and receiver) with baseband audio output (usually about 6.8 MHz center frequency) and a general coverage shortwave receiver with stable SSB capability. For printed news copy you will need a demodulator like an InfoTech M7000 and video monitor (and/or printer). Alternatively, you could use an AEA PK232 demodulator with an IBM-PC compatible computer (and printer for permanent copy).

Bob's Tip of the Month:

BC200XLT SHORT BATTERY LIFE SOLVED

Short battery life--sometimes only an hour or two between charges--seems to be the only major complaint among owners of the leading hand-held scanner, the Uniden Bearcat BC200XLT. Presumably, owners of similar sets like the BC100XLT, BC205XLT and Cobra 4030 could have the same problem. Now that is an ailment of the past.

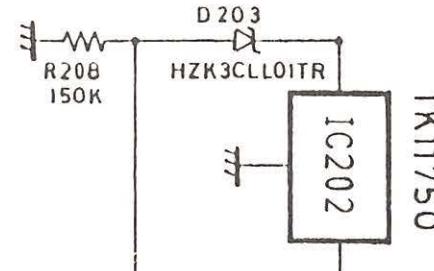
It turns out that the batteries were not really at fault; a zener diode which determines the voltage at which the low-battery indicator would come on was defective in some units, causing the circuit to actuate prematurely. Replacing that diode and changing the value of an associated resistor provides the answer.

Free Fix

MT contacted Uniden and was assured that they will provide the fix for free, even if the radio is outside of the one-year warranty period. If your Uniden BC200XLT suffers from short battery life, send the radio along with a brief note describing the ailment, to Uniden Customer Service, 9900 West Point Drive, Indianapolis, Indiana, 46250.

As shown in the accompanying diagram, zener diode D203 and resistor R208 are the parts in question. D203 should be about 7

volts and R208 should be 150,000 ohms. These are miniature surface-mount devices on double-sided circuit board; if your radio is under warranty, attempting this fix yourself will void that warranty.



Mark Machcinski of Wyandotte, Michigan, came up with his own solution. He simply soldered a wire bridge across diode D203, disabling the low battery indicator entirely. The radio now operates uninterrupted until it blanks out when the battery level drops to about 4.5 volts.

Yet another suggestion from a Canadian reader would bridge the original diode with a 6.8K resistor, defeating the premature recharge signal, yet preventing the battery from too low a discharge.

Q. Can a frequency counter be connected to my Realistic DX160 receiver so that I can have digital frequency readout? Can I improve the BFO so that SSB signals won't drift? (Robert Plumlee, San Bernardino, CA)

A. A frequency counter can be connected to the oscillator of any receiver, but the readout will be that of the oscillator, not the signal frequency. You will need to subtract 455 kilohertz from the display to know the tuned frequency.

The BFO circuit is not necessarily the culprit in signal drift; the receiver's main

Questions or tips sent to "Ask Bob," c/o MT, are printed in this column as space permits. If you desire a reply by return mail, you must enclose a self-addressed, stamped envelope.

oscillator may drift as well. Both of these circuits would have to be monitored by a frequency counter over a period of time to determine whether either, or both, is at fault. Then appropriate drift-cancellation measures would have to be taken to correct the design deficiencies in the receiver--not any easy task.

Unless you feel competent to take on this formidable challenge, let the old DX160 alone and get an inexpensive modern radio like the Sangean ATS803A which has much better stability and digital frequency readout as well.

Q. If I hold my PRO2005 scanner in a certain light, I can see a 30 kHz search step on the display, yet when I try searching the 870-890 MHz spectrum where 30 kHz is proper channel spacing, the interval never comes up, even with full frequency range restored. How come? (M. M., Poughkeepsie, NY)

A. We have tried to find out, too. It may be that different manufacturers of the microprocessor chip had variations with regard to that search step. Frankly, we don't know, and can't seem to find out from Radio Shack service centers.

Q. Can you give me the dimensions of a Yagi antenna for the aircraft band? (Melvin Gorr, Sheboygan, WI)

A. Sure. The rear reflector is 46-1/2" long, the driven element is 44" long and the forward director is 43" long. The reflector is spaced 18" behind the driven element and the director is 17" in front of the driven element. The driven element is fed at the center with coax.

Q. I have a Sears programmable scanner. Can I replace the microprocessor chip with another to extend the frequency range and memory capacity? (Roger Wofford, Crystal Lake, IL)

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A. No. CPU chips on scanners are proprietary, custom components rather than off-the-shelf standards. While it is true that some different scanner models from one manufacturer may share a common chip, there is only enough support circuitry on the board to allow it the functions advertised.

Q. What is the purpose of "line load telemetry" such as may be heard near 154.465 MHz and 189 kHz? (Robert Barker, Austin, TX)

A. Power companies need to monitor actual usage on their lines. Overloads may damage transformers and wiring as well as trip circuit breakers. Even if the equipment is capable of an overload, extra customer usage may require another generator to be brought on line to supply the demand.

Line load telemetry is a digitized system of signaling the dispatcher by radio or carrier current so that he can respond to changing power requirements.

When the dispatcher senses the need of another generator to be brought on line, whether from his own equipment or from

an interlinking power company, he slowly matches the voltage and phase of each system before connecting them in parallel; this prevents massive damage which would occur if the two systems were unmatched when they were connected.

Q. Why wouldn't the old "Q multipliers" found on Hammarlund communications receivers work as continuously-variable bandpass filters for all modes on modern receivers? (Henry Johnson, McLean, VA)

A. Q multipliers are inherently very sharply tuned, responding best to narrow-band signals like CW. Wider-bandwidth (modulated) signals would have their sidebands clipped, causing reduced fidelity (muffled voices). If the Q multiplier is adjusted wide enough to accommodate those wider bandwidths, then its selectivity goes to pot, allowing interference from adjacent channel signals.

LETTERS

continued from page 3

their lives besides sit on their fat ***** and talk about their rigs.

"I, for one, will applaud as Congress divides their once sacred frequencies and gives them away to companies who will use them to dispatch taxicabs."

Monitoring *Times'* own Ken Reitz, KC4GQA, was not nearly so bitter, looking at the problem this way: "[The ham radio community] is no different than any other subculture or social group and is thereby doomed to have a small segment of its population represent the equivalent criminal community in the larger society.

"These miscreants appear more noticeable because they enjoy a statistical advantage. While the percentage of this element is the same now as in 1920, the number of people in that element is large indeed. As the hobby has expanded, so has the number of imbeciles. And we may look forward to sharing our decreasing band space with ever increasing idiocy.

"The solution," counsels Ken, "is to do what 95 percent of this honorable community has always done: set a good example for the newcomers, fight for our rights to the public RF spectrum, and against those who would

dishonor the rest."

Hear, hear! Bravo! Speech! Speech!

And while we're at it, reader A.R. Uhlitz of Boca Raton, Florida, has a few suggestions for the advancement of ham radio. Says A.R., "It would be a great deal more enjoyable for the shortwave listener if the person talking would slow down. People don't talk this fast in normal face-to-face conversations. And at sign off time, it'd be great if the operators would mention their town and state."

"I recently received my first copy of *Monitoring Times*. I think it's a great magazine" says Frank E. Clark of Neptune City, New Jersey. "There is one exception, though. The 'program guide' lists times and countries but no frequencies. I don't see how it could be of any use to anyone. On the other hand, the 'frequency guide' is excellent."

We get this letter from readers from time to time. The answer is to combine the two sections, program and frequency. If you see a program you'd like to listen to, simply look up the broadcaster's listing in the frequency section under the proper time. Presto! The proper frequency. Yes, it's a little

inconvenient but it gets the job done.

Another question we frequently get is a request for information on DX programs. We do, from time to time, try to spice the program listing with DX shows. But we also try to present a wide variety of program listings in an effort to give what we feel is a representative sampling of what you can actually hear on the air. An article devoted exclusively to DX programs -- including times and frequencies -- is in the works.

New subscriber Marvin Seidman of Beverly Hills, California, checks in with some words of praise for the frequency section. "I really appreciate that section for my shortwave listening. Bought my first copy of *MT* at Henry Radio in L.A.," says Marvin, "and then sent in my subscription."

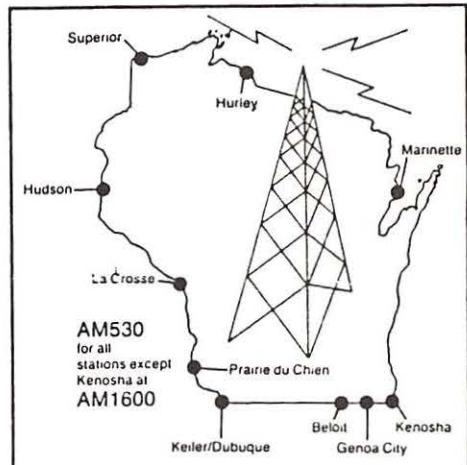
Paul Stecher of Pensacola, Florida, would like to see a critical review of headphones suitable for use with communications receivers. Paul wants to see brands and prices.

Karl Heil passes along a map showing the locations of all ten of the Wisconsin Tourist Development Board's low-power transmitters that we mentioned in last month's "communications" section. As the map indicates, all sites broadcast on 530 kHz except for Kenosha, which is on 1600 kHz.

MONITORING POST PIN-UP

A reader from Wisconsin checks in with photos of his monitoring post. Actually, Kenny Dicks of Colfax says, "I like to think of it as more than a monitoring post; We are doing our best to get the frequency of everything on the air in the area. We also operate as KE9CS when things are quiet." When his *MT* arrives each month, Kenny reads it in front of his Kenwood TS-440 and enters every new frequency!

Other equipment includes a Realistic PRO-2004 scanner, Browning Mark IV CB with a Motorola unit for a 12V backup, two Bearcat BC210's, a Kenwood TM-221A and TR-2600A, and a Realistic 16-115 and DX 150A (to be replaced by a Sony 2010). Nine different antennas make sure there's no part of the spectrum he can't receive!



Paul Stringer of Christchurch, New Zealand, drops us a note saying that a friend has lent him some back issues of *Monitoring Times*. "And let me say that it's the best DXer's magazine in the world," opines Paul. "Would you print VHF, UHF and HF frequencies from this side of the globe?" he asks. Paul, we would be delighted to have your participation just as we welcome the participation of radio listeners from around the globe. It would be our pleasure to hear from you again.

Checking in from South Humber-

side, England, is Mr. F. L. P. Stampton. He recalls a letter that we printed some time ago in which a reader said that he did not receive any response to correspondence he sent in to HCJB in Quito Ecuador. Mr. Stampton says that he has listened to HCJB "every day for the past four years." And, he says, he has sent reception reports for all that time, "including a spell in the hospital."

The result of this dedication is that Mr. Stampton has "132 QSLs plus calendars, personal letters, and signed, autographed pictures of many of the staff. I look upon the staff as very caring people and count them among my friends." Mr. Stampton, we agree. When it comes to HCJB, we here at *Monitoring Times* feel as you do.

Interested in the shadow world of clandestine broadcasting? Check out Harald Kuhl's monthly *Clandestine Calling*, available for only US\$15.00. Each month Harald brings you the latest news on clandestine radio stations, a comprehensive and up-to-date frequency list, QSL information, background reports, loggings and more. For a sample, send US\$1.00 to Mr. Kuhl at Weender Str. 30, D-3400 Goettingen 1, West Germany.

Steve Forest has a tip for wrangling QSL cards out of reluctant broadcasters, specifically, state-run broadcasters. "Forget calling overseas," says Steve. "Try the local embassy."

Steve thought of this after spending a fortune chatting with someone at Radio Luxembourg, trying to talk them into sending him a QSL. When the same problem arose with a recalcitrant Radio

Yugoslavia, "I called the embassy and spoke to the press attache." A creative idea, Steve, that can, from time to time, bring impressive results.

John Cassidy of Groton, Connecticut, sent us a clipping from the Honolulu *Star-Bulletin* that included the local radio log. We reprint it herewith for your enjoyment.

That's all for this month. Good listening.

Got a comment? Send it to **Letters to the Editor**, *Monitoring Times*, P.O. Box 98, Brasstown, NC 28902. Please include your name and address. We'd like to hear from you!

Oahu radio log

	AM	FM	Programming
KSSK	590		"KS9," adult contemporary
KOMQ	690	93.1	"Super Q" Top 40
KGU	760		News, talk and sports
KIKI	830		Classic rock'n'roll
KAIM	870	95.5	Christian music
KDEO	940	102.7	Contemporary country-western
KHVN	990		News, UH sports, talk
KLHT	1040		Christian radio
KWAI	1080		"K108" Talk, sports
KOHO	1170		Japanese-language station, with news, music, discussion, live broadcasts from Japan
KZOO	1210		Japanese-language with music, news, drama, storytelling, live broadcasts from Japan
KNDI	1270		Religious and ethnic programming: Filipino, Samoan, Tongan, Chinese, Portuguese, Okinawan and English
KCCN	1420		Hawaiian music
KUMU	1500	94.7	Easy listening, instrumental-based contemporary Tagalog, Ilocano, Visayan and English programming
KISA	1540		
KHPR	88.1		Hawaii Public Radio: classical music, news
KIPO	89.3		Hawaii Public Radio: news, jazz, classical, folk
KTUH	90.3		Jazz, classical, rock, Hawaiian
KSSK	92.3		Current adult contemporary
KIKI	93.9		"94," current hits, dance
KRTA	96.3		Soft rock
KPOI	97.5		"98 Rock," rock'n'roll
KHHH	98.5		"The Wave," light jazz, soft rock, new age
KHFX	105.1		"The Fox," classic rock'n'roll

CONVENTION CALENDAR

Date	Location	Club/Contact Person			
May 4-6	Sierra Vista, AZ	Cochise ARA/ Mike Lading 5108 Leonardo De Vinci, Sierra Vista, CA 85635	May 20	Paramus, NJ	Bergen ARA/ Jim Joyce K2Z0 286 Ridgewood Blvd No, Westwood, NJ 07675
May 5	Cedarburg, WI	Ozaukee ARC/ Joe Bauer W9WQ N 5415 Crystal Springs Ct, Fredonia, WI 53201	May 26	Durham, NC	Durham FM Assoc/ Edwin Lappi WD4LOO 203 Lynn Dr, Carrboro, NC 27510
May 5	Owego, NY	Southern Tier ARC/ Mike Gruszka 3 Londonderry Lane, Owego, NY 13827	Jun 1-3	Seaside, OR	NW Div Convention/ Jim Schaffer KB7ADH 7139 SW 7th Ave, Portland, OR 97219
May 5-6	Columbia, SC	Columbia ARC Mayfest/ Robt Truex N4QWL 14 Center Creek Estates, Ridgeway, SC 29130 SSB 28.4000, 21.4, 14.25, 7.200 MHz; CW 28.200, 21.040, 14.040, 7.040 MHz. QSL with SASE to CARC Mayfest, P.O. Box 5802, Columbia, SC 29250	June 2	Knoxville, TN	RAC of Knoxville/ Leroy Cebik W4RNL 2414 Fair Dr, Knoxville, TN 37918
May 5-6	Greenville, SC	Blue Ridge ARS/ John Chism ND4N Rt 6, 203 Lanewood Dr, Greenville, SC 29607	June 3	Depew, NY	Lancaster ARC/ Alvin Lincoln KB2FIN 2779 Stony Point, Grand Island, NY 14072
May 11-12	S. Sioux City, NE	Iowa State Conv/ Lynn Hansen KNOO 2932 Pierce St, Sioux City, IA 51104	June 3	Evansville, IN	Tri-State ARS/ Martin Hensley KA9PCT 1506 S. Parker Dr, Evansville, IN 47714
May 11-13	Fresno, CA	Fresno ARC/ Edward Plumber KB6LBS 12460 E Heather, Clovis, CA 93612	June 3	Manassas, VA	Ole'Virginia Hams ARC/James Lascaris WA2QEJ 12207 Woodlark Court, Manassas, VA 22111
May 12	Columbia, MO	Central MO RA/ Benton Smith K0PCK 3301 Sinclair, Rt 3 Box 196A, Columbia, MO 65203	June 3	Chelsea, MI	Chelsea ARC/ William Altenberndt WB8HSN 3268 Essingham, Jackson, MI 49201
May 12	Deerfield, MA	Hoss Traders/ Bill Burden WB1BRE 11 Brland Dr, Nashua, NH 03063	June 3	Princeton, IL	Staved Rock RC/ Donal Selbredo NO9Q 1314 Creve Coeur St, LaSalle, IL 61301
May 13	Medina, OH	Medina M2M Club/ Clarence Miller WA8JLA 620 Oak St, Medina, OH 44256	June 3	Butler, PA	Breeze Shooters Hamfest/ H. Rey Whanger RD 2 Box 8, Cheswick, PA 15024; 412-828-9383
May 13	Westminster, MD	Summit ARA/ Alan Parker KS3L 1222 Ingleside Ave, Baltimore, MD 21207	June 3	Queens, NY	Talk-in: 147.96/.36. Check in on 146.52 Hall of Science ARC/ Steve Greenbaum WB2KDG P.O. Box 131, Jamaica, NY 11415; 718-898-5599
May 13	Vinton, VA	Roanoke VA ARC/ Bob Denton AB4SD 6227 Saddleridge Rd, Roanoke, VA 24018 Talk-in: 146.985	Jun 8-9	Albany, GA	Talk-in: 144.300 simplex; 223.6, 445.225 rpt Albany Georgia ARC/ John Crosby K4XA P.O. Box 1205, Albany, GA 31702
May 18-20	Rochester, NY	Atlantic Div/NY State Conv/ Harold Smith K2HC 153 Mason Ave, Rochester, NY 14626	Jun 8-10	Kansas City, MO	ARRL Nat'l Convention, Chuck Miller WA0KUH 7000 NE 120th, Kansas City, MO 64166
May 20	Wrightstown, PA	Warminster ARC/ Mark Kempisty N3GNW 3854 Moosewood Ave, Trevose, PA 19047	Jun 8-10	Ft Worth, TX	Ham-Com, Inc/ John Fleet WA5OHG 4348 Potomac, Dallas, TX 75205
May 20	Tamaqua, PA	Tamaqua Trans Soc & Anthracite Rptr/ Allan Breiner K3NYX 212 Race St, Tamaqua, PA 18252	June 9	Greenbush, ME	Shortwave Station WCSN; First annual Ham/SWL/Computer Sell/Swap/Trade
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May 20	Wheeling, WV	Triple States RAC/ Ralph McDonough K8AN Box 240 RD 1, Adena, OH 43901	June 10	Willow Springs, IL	Six Meter Club/ Joseph Gutwein WA9RIJ 7109 Blackburn, Downers Grove, IL 60515
May 20	Wabash, IN	Wabash ARC/ Donald Spanger W9HNO 235 Southwood Dr, Wabash, IN 46992	June 10	Erlanger, KY	North Kentucky ARC/ John Thernes WM4T 60 Locust Ave, Covington, KY 41017
			June 10	Suffield, OH	Goodyear ARC/ Jim Trutko W8EXI 2530 Sackett Ave, Cuyahoga Falls, OH 44223

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Wanted: Antenna/Handle assembly for ZENITH Transoceanic R1000D transistor radio. Howard Lash, 19 E. 157 Street, South Holland, IL 60473.

Wanted: Service Literature for short-wave receivers: PANASONIC RF799, KNIGHT R-100A. Thanks. Ken Miller, 820 S.W. Burlingame Terrace, Portland, Oregon, 97201.

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WANTED: IC's SN76477N, SN76488N, MM5837. Johnson, Box 1191, Johnson City, TN 37605.

Wanted: Modification information on the UNIDEN HR2510 transceiver. Write GLC, 115 Huntington Blvd., Roanoke, VA 24012.

Wanted: RADIO FREQUENCY JAMMING: Knowledge and/or equipment, also highly sensitive hearing devices: surveillance or medical. Eugene Dell, 300 Bentwood Ave., Johnstown, PA 15904.

For Sale: YUPITERU MVT-5000 Superscanner. New. \$550. [708] 495-4431 evenings.

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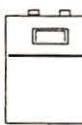
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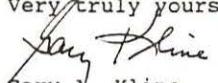
Bob Grove
Monitoring Times
P. O. Box 98
140 Doug Branch Road
Brasstown, NC 28902

RE: Scanning Radios

Dear Bob:

This letter is in regard to the article, "Bob's Tip of the Month", in the February, 1990 edition of Monitoring Times Magazine. The article describes how to restore the deleted cellular band coverage in Uniden BC760XLT/BC950XLT scanning radios.

Uniden America Corporation does not endorse or authorize Monitoring Times to modify or help consumers modify Uniden scanning radios to make them capable of monitoring cellular telephone conversations. As you know, monitoring these types of conversations may violate the Electronic Communications Privacy Act of 1986. The article correctly pointed out such modifications void the Uniden product warranty.

Very truly yours,

Gary A. Kline
Corporate Counsel



Gary Kline, Corporate Counsel
Uniden America Corporation
4700 Amon Carter Blvd.
Ft. Worth, TX 76155

Dear Gary:

It was good to hear from you and I appreciate your comments concerning our "tip of the month" which concerned the restoration of complete frequency coverage in the BC760/950XLT series of Bearcat scanners.

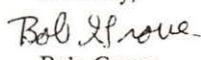
The modification was presented in response to requests by scanner owners who, seeing that uninterrupted frequency coverage is available in other scanners including your own BC800XLT, would like the same capability in their scanners.

Our readers are constantly reminded that monitoring cellular (and any other mobile telephone) communications may be unlawful under the protection of the ECPA and that the modification will void their Uniden warranty.

Monitoring of ECPA-protected communications may be a violation of law, but the possession of a device (i.e., scanner) which is not primarily useful for such interception is explicitly lawful under provisions of the ECPA.

Since the sale of an article surrenders any reasonable expectation of control by the former owner (in this case the manufacturer), neither endorsement nor authorization by Uniden concerning subsequent use is sought.

Sincerely,


Bob Grove
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